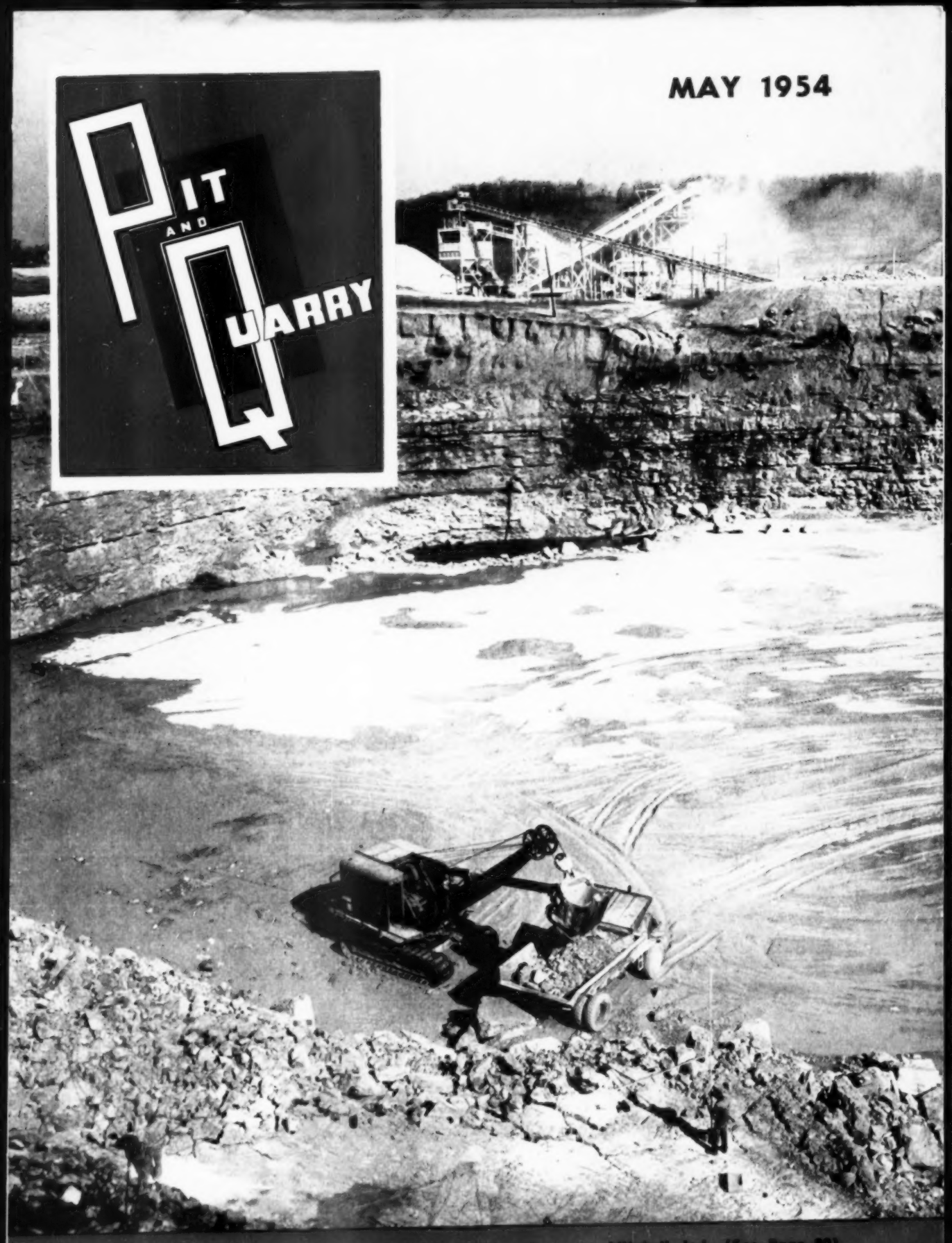
PIT AND QUARRY

MAY 1954



Quarry and Plant of the Mitchell Crushed Stone Co., near Mitchell, Ind. (See Page 90)

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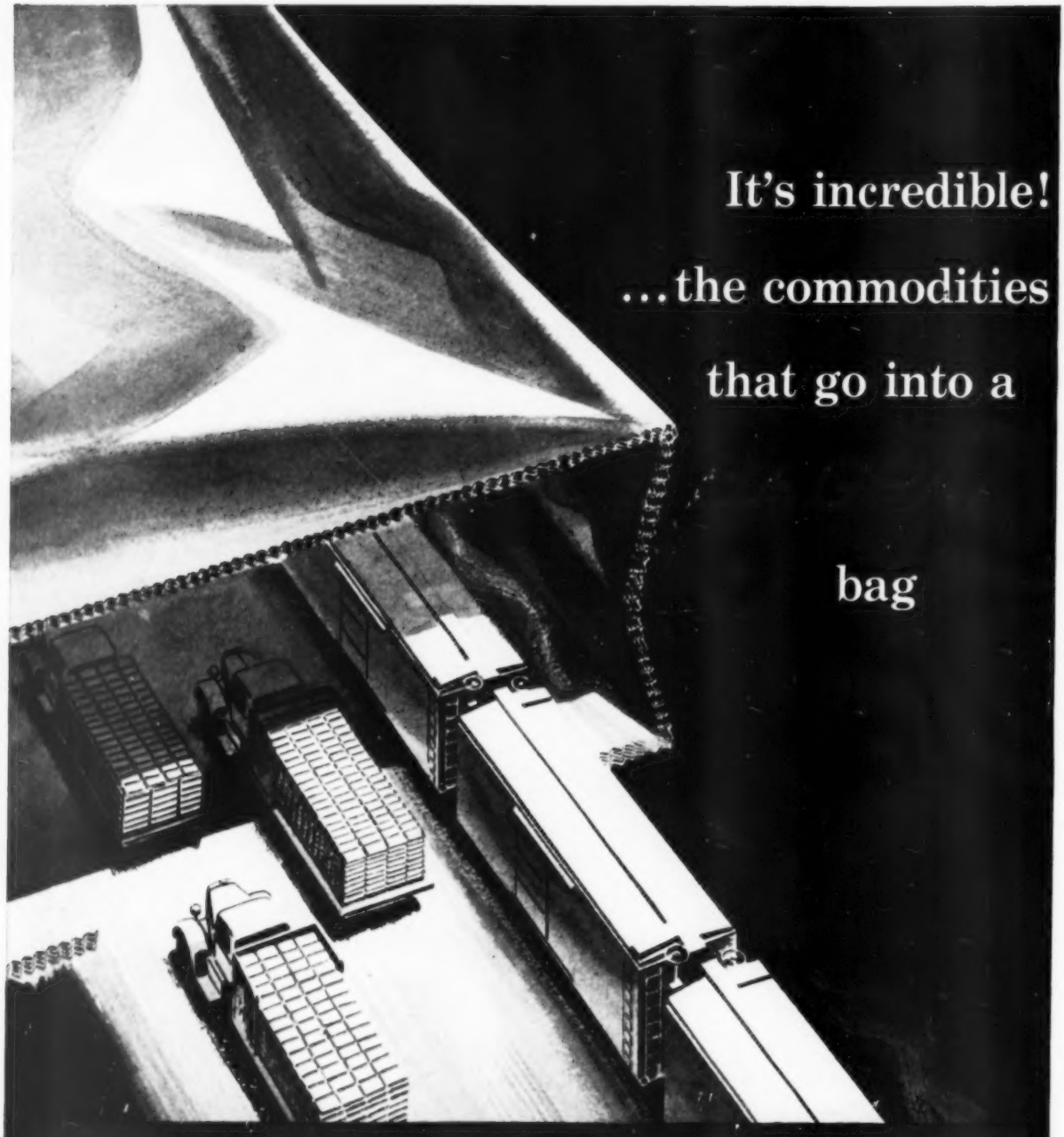


Polystyrene—Feeds—Calcium Chloride—Salt—Ammonium Nitrate—Cement—Rosin—Fertilizers—Sugar—Flour—Insecticides—Fine Chemicals—Clays—Rock Wool—and over 400 other products costing from less than a cent a pound to over a dollar a pound are being packed in Bagpak Multiwall Paper Bags.

Request also literature on Bag Closing machines. For details about bags and machines write to Bagpak Division, International Paper Company, 220 East 42nd St., New York 17, Dept. O-7

International Paper COMPANY

BAGPAK DIVISION

BRANCH OFFICES: Atlanta · Baltimore · Bates Springs, Kansas · Boston · Chicago · Cleveland · Denver · Detroit · Kansas City, Kansas · Los Angeles · New Orleans · Philadelphia · Pittsburgh · St. Louis · San Francisco · IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa, Toronto

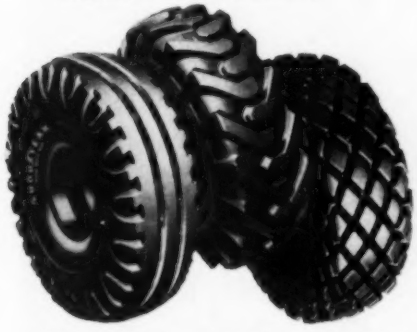
The 13,800,000-cubic-yard Palisade Dam on Snake River, Idaho, will be one of the world's largest earth-fill barriers—260 feet high, 2,200 feet long by 40 feet wide at the crest, and 2,250 feet wide at the base. Wrenching the treacherous Snake River from its bed to a man-made channel (with 60 miles of momentum behind the river) was just one of the problems this job dishes out regularly!

GIANT HARD ROCK LUGS, as all types of tires used on this job, get expert, periodic inspections that save rubber and down time.

Wherever there's a job-for-the-book, GOODYEAR IS THERE. Yes — *all* there — with the right type tire for each job, with the *toughest* tires ever, because now they're built with new, Triple-Tempered (3-T) Cord!

3-T Cord—both Nylon and Rayon—is made by Goodyear's exclusive Triple-Tempering process. It *stays* at its most bruise-resistant, heat-resistant point, controls tire growth, cuts tread and body failures to new lows. Get *all* the facts before you buy or specify any other tire. Goodyear, Truck Tire Dept., Akron 16, Ohio.

GET THEM IN 3-T NYLON
for greatest all-round stamina



HARD ROCK RIB SURE-GRIP ALL-WEATHER

FOR EACH JOB, THERE'S A COST-CUTTING GOODYEAR TIRE!

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

Sure-Grip, All-Weather—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

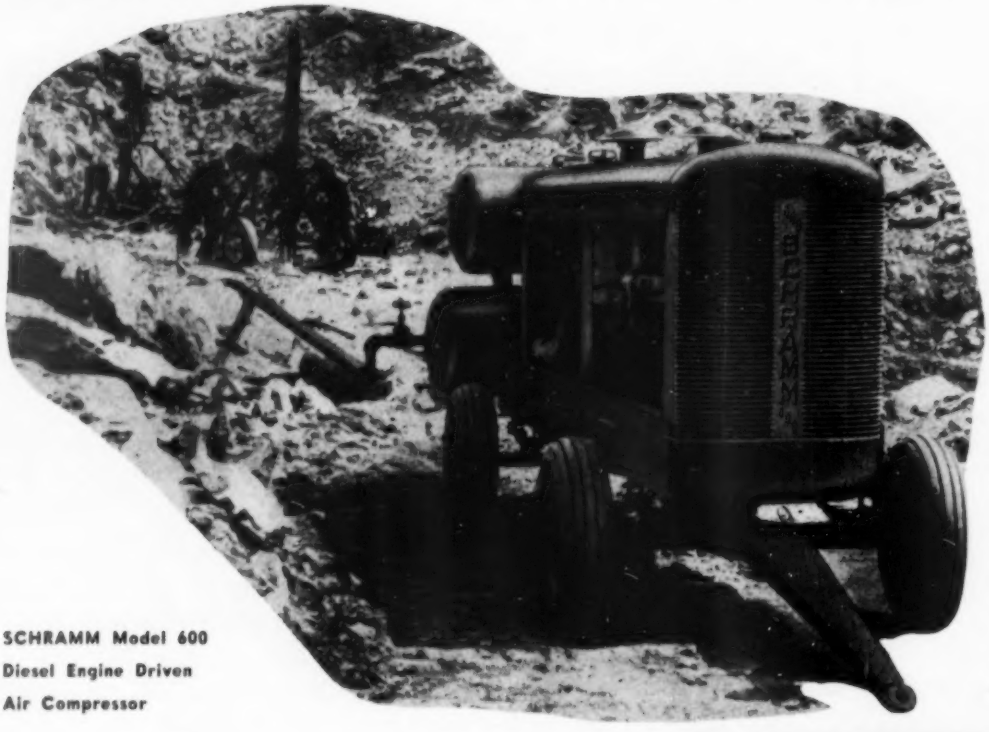
PIT AND QUARRY, May, 1954, Vol. 46, No. 11. Published monthly by Pit and Quarry Publications, Inc., 431 South Dearborn St., Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy $1.00. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

HIGH I.Q.*

Schramm AIR

COMPRESSORS AND TOOLS

*Interest for Quarrymen



SCHRAMM Model 600
Diesel Engine Driven
Air Compressor

Ask anyone with lots of experience in quarrying — "front office" man, foreman, or drill operator —why he's interested in the new SCHRAMM Model 600 unit.

He'll point out that it's "on the record" that this husky machine has what it takes to handle the air compressing angle of any job with the least fuss and the most effect.

This overall superiority is a combination of superb engineering and construction.

Simplified, streamlined design — fewer parts — watercooled operation with doors closed — less power needed — dual fan belts — these are only a few of the unique advantages that establish SCHRAMM as "high man" among practical quarrymen.

Write for Catalog 5350

SCHRAMM, INC.

The Compressor People

WEST CHESTER • PENNSYLVANIA

The SCHRAMM Line

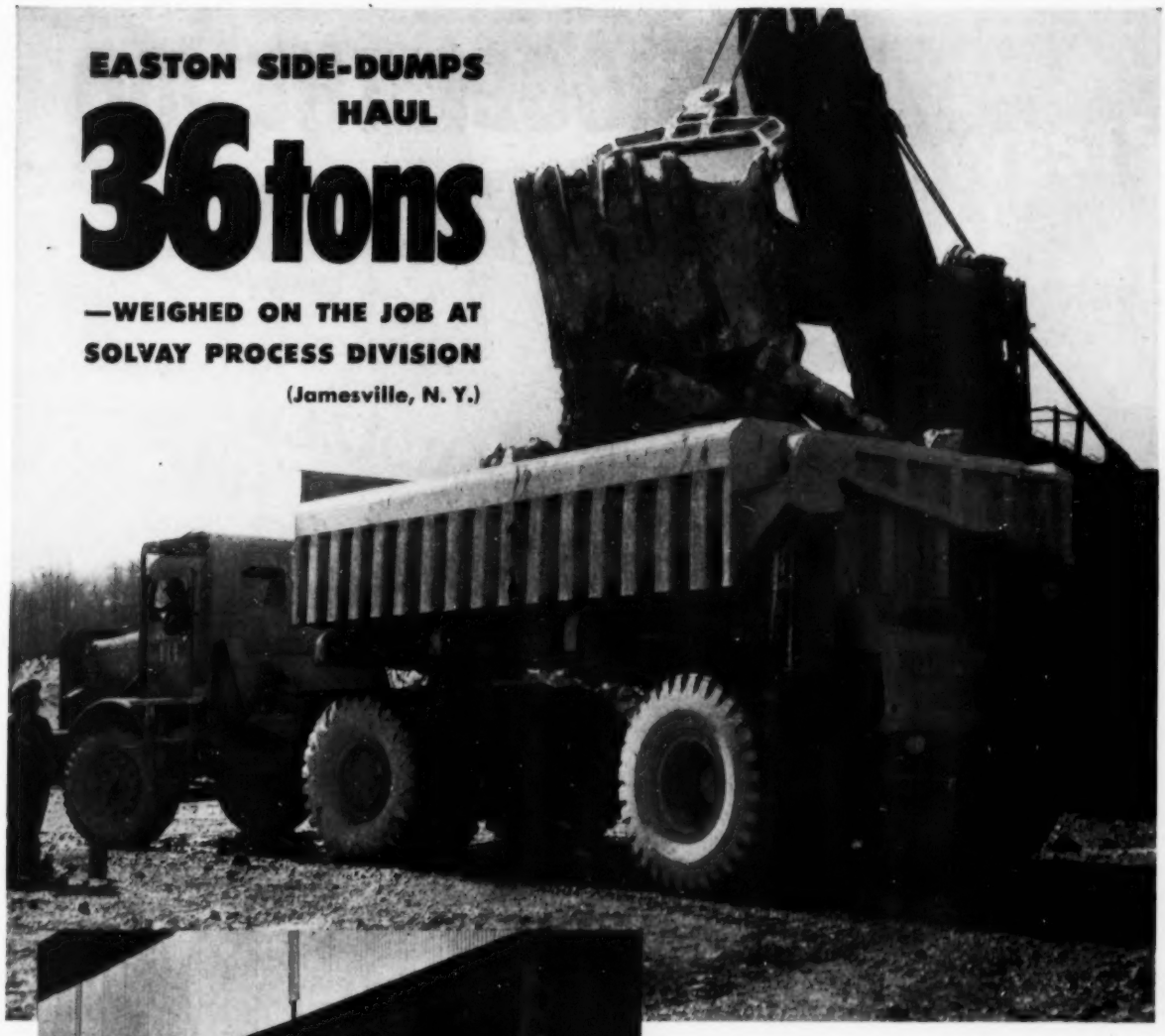
includes

Air Compressors in sizes ranging from 20-cfm to 600 with Paving Breakers, Wagon Drills, Pneumafeed, Pneumajack, Pneumadriver, Rock Drills, Sheeting Drivers, Clay Spades, Backfill Tampers and a complete line of accessories.

EASTON SIDE-DUMPS HAUL 36 tons

—WEIGHED ON THE JOB AT SOLVAY PROCESS DIVISION

(Jamesville, N. Y.)



Feeding the big primary crusher. EASTON TL-2736 Trailer with Euclid 46-TD Tractor dumped by EASTON Electric Overhead Hoist.

Nine EASTON side-dumps replace rail haulage to provide flexibility and increased production

Solvay's nine new EASTON TL Trailers load at four different levels at four faces. Traffic is directed, trip-by-trip, from a central control tower.

EASTON TL TRAILER—The standard EASTON lift-door side-dump trailer. Capacities from 22 to 36 tons. Used singly or in combination. Standard EASTON axle. Durable, all-welded construction, reinforced throughout. Works with the truck or tractor of your choice. The same bodies may also be truck-mounted. *Built for the low-cost haul!*

B-1063

EASTON®

Easton Car & Construction Company · Easton, Pa.

THE BIGGER THE JOB THE MORE YOU SAVE

BARBER-GREENE

MODEL 76

PERMANENT BELT CONVEYORS

SAVE SELECTION ENGINEERING ERECTION TIME ... AND MONEY

Barber-Greene Conveyors are made of pre-engineered, self-contained, *standardized* units that are quickly assembled without costly engineering time. Field assembly of miscellaneous pulleys, bearings and dozens of other parts is completely eliminated. B-G Conveyors are as easily disassembled, expanded or relocated—with 100% salvage. The value of these B-G features is in direct proportion to the size and scope of the conveying job. The bigger the job—the more you will save. Wherever you have bulk handling problems—or are planning to modernize or expand present facilities—investigate Barber-Greene Conveyors. Take advantage of Barber-Greene's extensive experience in solving problems of bulk handling similar to your own. Complete descriptive data is available for handy reference—it's yours for the asking.

Barber-Greene BG

Aurora, Illinois, U. S. A.

ROCK MEN will tell you

ALL NORTHWESTS are Real ROCK SHOVELS!

● Here's a story over the years. Here are three pits of the many in Pennsylvania using Northwests. All of them are operating Northwest repeat order machines. Their business is rock—and tough rock! They found that their first Northwest had the qualities they needed—qualities and advantages that make the Northwest a *Real* Rock Shovel.

People in this business buy on performance. Northwest performance is the result of a group of advantages that combine for fast digging and high output in the toughest going. The Northwest Dual Independent Crowd utilizes force most other independent crowd shovels waste. Uniform Pressure Swing Clutches eliminate the jerks and grabs that delay spotting heavy loads. The Cushion Clutch eliminates overloads before they can damage machinery and prevents delays that would come with stalling. The "Feather-Touch" Clutch Control gives the *feel of the load* and makes operation easy without resorting to the complications of compressors, pumps, valves and tubing.

Ask the rock men and remember if you have a *Real* Rock Shovel you never have to worry about output in any digging.

NORTHWEST ENGINEERING COMPANY
135 South LaSalle Street
Chicago 3, Illinois

(Top) D. M. Stoltzfus & Son, Inc., has purchased a third Northwest for their pits at Talmage, Pa.

(Center) White Rock Quarries at Belleforte, Pa., are now operating their 8th Northwest.

(Bottom) White Pigment Corp., at York, Pa., have recently put their 2nd Northwest to work.

If you are interested in Rubber Mounted equipment be sure to see the Northwest Truck Crane before you buy.

NORTHWEST

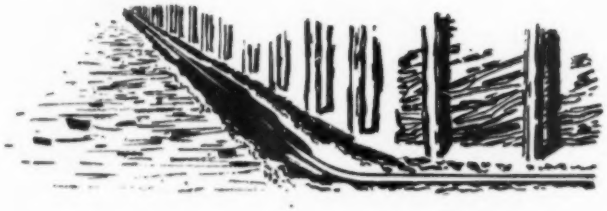
SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

Convertible for any Mining Material Handling or Excavation Problem

Expose it to sun and heat...

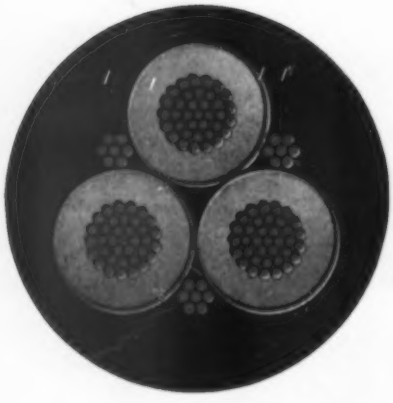
Pull it over rocks and shale...

Trench it in presence of acid water...



Through it all—

Anaconda's tough **MINE POWER CABLE** keeps power flowing



This easy-to-splice cable is built for heavy duty. It saves you money. It handles well. And it lasts longer – with fewer power interruptions, less maintenance trouble.

Here's why:

BUTYL INSULATION has high dielectric strength . . . superior long-aging characteristics . . . and excellent resistance to moisture, ozone, and heat.

NEOPRENE JACKET is tough . . . has real flexibility and great strength . . . and is resistant to flame and corrosive mine water.

See your nearest Anaconda Sales Office or Distributor for full information about this durable, low-cost Mine Power Cable. Do it today! *Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.*

54340

the right cable for the job

ANACONDA® **WIRE AND CABLE**

Imagination at work

Because your Multiwall Bag is specially made to your order, imaginative planning plays a big part in how much packaging efficiency you get per dollar. You will find, as have many of America's leading shippers, that Union has very real advantages for you in know-how, design services, manufacturing facilities and delivery.

UNION MULTIWALL BAGS

UNION BAG & PAPER CORPORATION

Woolworth Building, New York 7, N. Y.

TRADE MARK UNION

a full bucket every bite

You can't make money with an empty bucket! SHOVELOADER fills the bucket every time.

First—it gives you power downcrowd to the amazing depth of 25 inches. Second, you can tilt the bucket back as much as 30 degrees at ground level. This combination means natural "ground-breaking" digging action—faster excavating or stripping—and, profitable *full* bucket operation.

SHOVELOADER bucket is *wide*, wider than wheel treads. You can dig right up to the curbs or walls, making clean-up jobs easy. The tractor follows, without climbing, wherever the bucket can dig.

With lifting height of 10′ 10″ SHOVELOADER easily loads the highest truck. Long forward reach permits spotting loads in center of truck body. Long 100-inch wheelbase assures stability when digging, lifting or carrying loads.

Other exclusive built-in features increase utility by improved rough-terrain operation, greater operator safety, mobility, and longer life.

Standard 1½ yard bucket is interchangeable with 1¼ yard or 2½ yard sizes, also forks, lifting crane, backfill blade, bulldozer or snow plow. Write for 8-page descriptive bulletin. The BAKER-LULL Corporation, 356 West 90th Street, Minneapolis 20, Minn.

THE BAKER-LULL CORPORATION,
356 West 90th Street • Minneapolis 20, Minn.

Please send 8-page illustrated specification bulletin AD-55 on your 4-Wheel Drive SHOVELOADER

NAME.....

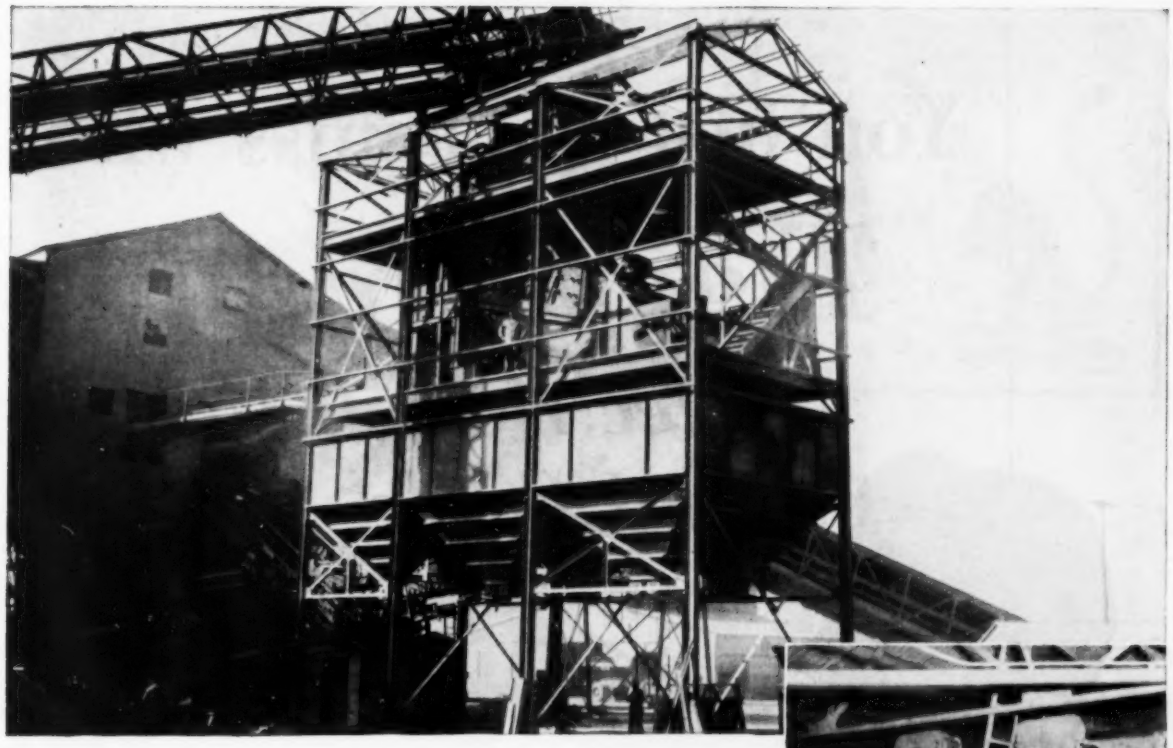
COMPANY.....

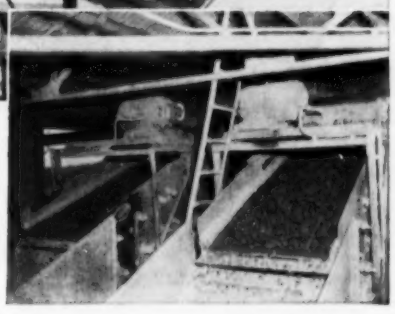
ADDRESS.....

CITY.....STATE.....

Baker Lull
handling equipment

SHOVELOADER





New Fines Mill at Buffalo Crushed Stone equipped with 4 Double-Deck 4′ x 14′ Deisters

Four new Type UHS Deister Heavy Duty Vibrating Screens have increased the output of fine sizes (½", ¼", ⅛" and 14 mesh) by 100 to 125 tons per hour at the Bowmansville, New York, plant of the Buffalo Crushed Stone Corporation.

Installed in the new fines mill, these screens have relieved the main screening plant which has improved gradations to meet the New York State specifications for Concrete and Bituminous Material.

Plant Superintendent Paul Leto and Milo Crouse, Manager of Operations, are very proud of the performance of this new installation.

Here are a few of the outstanding features of Deister Heavy Duty Type UHS Screens that make many users "repeat order" customers: *life-time unitized vibrating mechanism; opposed elliptical throw* for greater speed and efficiency in sizing; *divided interchangeable screening sections* to distribute normal wear and prolong life of screening medium.

(Top) Photo of New Fines Mill before it was covered, showing four Deister Type UHS Vibrating Screens as installed on upper and lower levels.

(Center) Upper floor of Buffalo's New Fines Mill, showing two 4′ x 14′ double-deck Deister Heavy-Duty UHS Vibrating Screens, with ½" screen cloth on top deck and ¼" on bottom deck. Type UHS Screens are available in 3′, 4′, 5′ widths; 10′, 12′, 14′ lengths; single-, double-, and triple-deck.

(Below) Exterior view of New Fines Mill at Bowmansville plant.

DEISTER

DEISTER MACHINE COMPANY

1933 EAST WAYNE STREET, FORT WAYNE 4, INDIANA

You just can't miss with

Tiger Brand

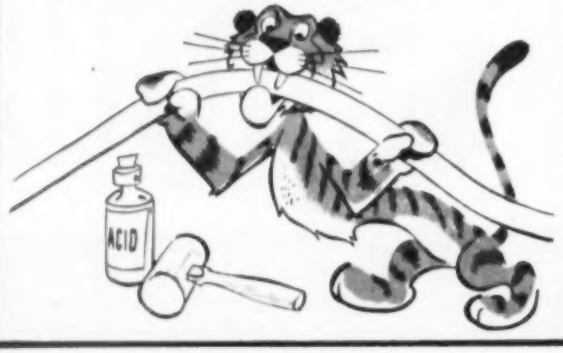
Electrical Wire and Cable

Varnished Cambric

Tiger Brand Varnished Cambric Cable is the most economical way to transmit large blocks of power short distances.

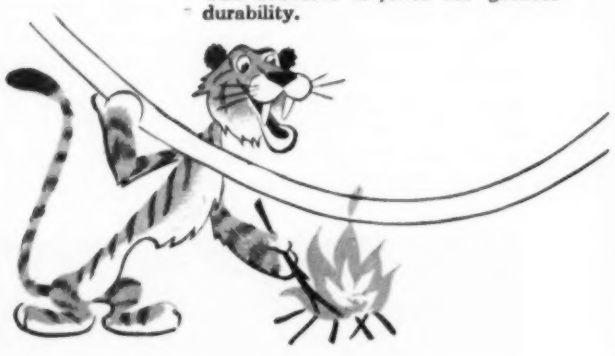
Amerclad

To withstand physical abuse, moisture, sun and oil, use Tiger Brand Amerclad for all sorts of portable equipment.



Amerbestos

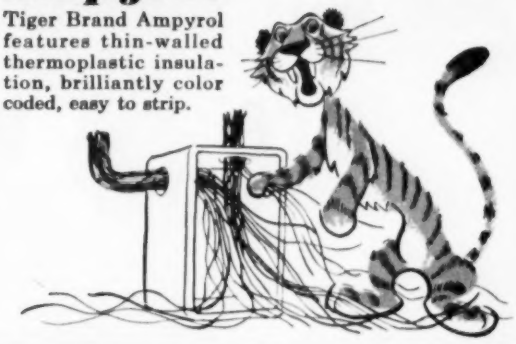
Tiger Brand Amerbestos is a true *quality* heat resistant material. The asbestos is *felted* for greater durability.



Submarine For underwater power distribution, there's a Tiger Brand Submarine Cable to withstand any operating condition.

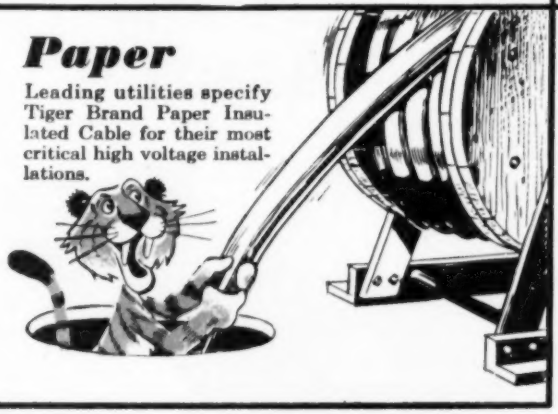
Ampyrol

Tiger Brand Ampyrol features thin-walled thermoplastic insulation, brilliantly color coded, easy to strip.



Paper

Leading utilities specify Tiger Brand Paper Insulated Cable for their most critical high voltage installations.



American Steel & Wire *specializes* in wire and cable that must withstand abusive service. No matter what kind of operating condition you may have, there is probably a *standard* Tiger Brand Wire or Cable that will give you better service than you ever dreamed of.

Send the coupon and outline your problem. We'll see that you get service—*fast.*

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

A STANDARD TIGER BRAND CABLE FOR EVERY SPECIAL JOB

- asbestos wire and cable
- mold cured portable cord
- aerial, underground and submarine cable
- shovel & dredge cable
- paper & varnished cambric cable
- machine tool & building wire
- special purpose wire & cable

SEND THE COUPON

American Steel & Wire
Room GE-54, Rockefeller Building
Cleveland 13, Ohio

● Please give me more information about Tiger Brand Wire & Cable for .....

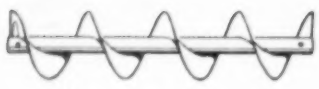
Name .....
Firm .....
Address .....
City ..... State .....

U·S·S Tiger Brand ELECTRICAL WIRE & CABLE

USS

UNITED STATES STEEL

See why Link-Belt screw conveyors are 8 ways better

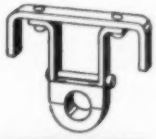


1. LOOK FOR UNIFORMITY OF PITCH

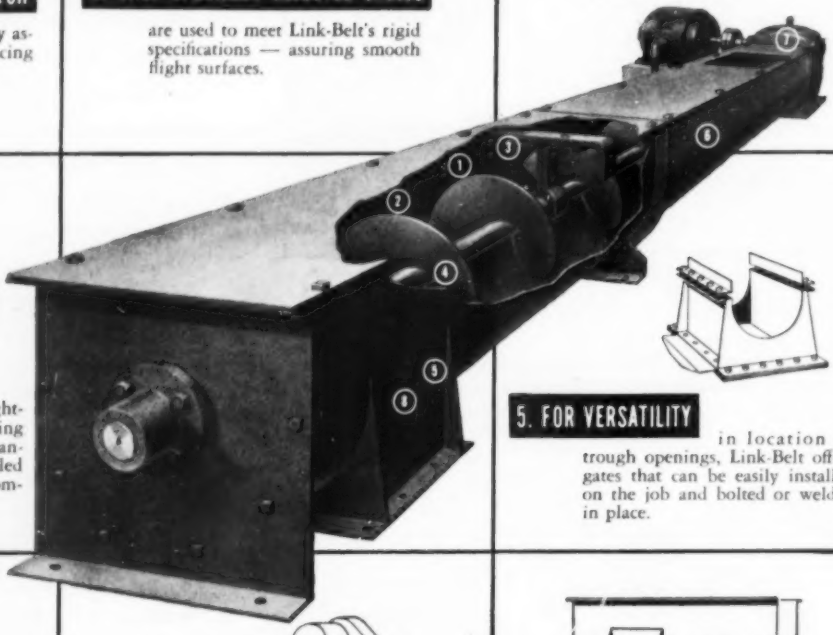
Specialized modern machinery assures accurate forming, producing uniform flighting curvature.

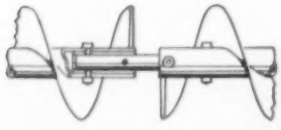
2. ONLY SPECIALLY SELECTED STEELS

are used to meet Link-Belt's rigid specifications — assuring smooth flight surfaces.



3. HERE'S A WIDE RANGE of hanger styles and mountings with various bearing materials.

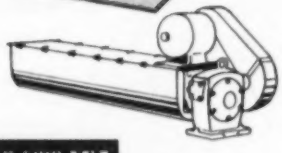




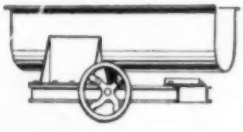
4. FOR YOUR PROTECTION straightness is checked before shipping and extra care is taken in handling and loading. Jig-drilled coupling bolt holes assure complete and easy assembly.

5. FOR VERSATILITY in location of trough openings, Link-Belt offers gates that can be easily installed on the job and bolted or welded in place.

6. YOU'LL DISCOVER that troughs are accurately fabricated to assure better fit of all components. Link-Belt offers a choice of metals to fit your particular application.



7. ONLY LINK-BELT builds a complete integrated line of gear and chain drives, couplings, bearings. One proved source . . . one undivided responsibility.



8. YOUR CHOICE of fixed or detachable plain discharge spouts or gates. Flat or curved slide type gates can be hand or rack-and-pinion operated.

LINK-BELT

SCREW CONVEYORS

These are only a few of the many important differences in screw conveyors. Ask your Link-Belt sales representative or distributor for new 92-page Data Book 2289.

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle; Scarboro, Toronto and Elmira, Ont. (Canada); Springs (South Africa); Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities. 19,278

How many hundred dollars will this ad save you?

Both K-2 and K-4 links are shown at the left. When wide buckets are used, Kensington's special 4-hole K-4 makes it possible to use one strand instead of two . . . *and that single KENKROME chain will be stronger than two ordinary No. 844 chains!*

How much do you spend each year to replace elevator chains and sprockets?

Be sure to include the labor needed to make each change. And don't forget loss in production while your plant is shut down for repairs.

Now figure the money you'd save by using a chain that outlasts ordinary chains 2 to 4 times. That's what you can expect from the improved KENKROME No. 844 Heavy Duty Elevator Chain shown above!

KENKROME is no ordinary steel . . . in fact it's no ordinary manganese steel. There's no other steel quite like it.

Addition of special alloying metals under a patented process, plus Kensington's own scientific method of heat treatment, have created this remarkable metal which defies wear by developing surface hardness under impact to better enable it to withstand abrasion. Beneath this continually hardening surface, the metal always remains tough . . . better able to withstand shock than are metals that are hard all the way through.

But Kensington's wear-conquering engineers didn't stop with development of the metal itself. They redesigned the physical characteristics of the links. Note, for example, how the extra-heavy 1¼" pin is held in place. Even in those rare instances when a pin *does* break, it can't fall out, for on one end a cotter pin fits over its head, and on the other, a cotter pin passes through both pin and extended boss. Pins have T-head so they may be reversed. They fit link holes that are drifted to close tolerances. Links are extra heavy . . . heavier than in any other No. 844 built.

The Renewable Tooth Sprocket is another example of Kensington's improved design. Tooth segments can be replaced by two men during lunch hour . . . without even removing the chain! And a new set of teeth costs but a fraction of what you'd pay for a complete one-piece sprocket.

KENKROME Chains and Sprockets are built to fit all standard conveyors and elevators used in rock, gravel, and cement plants. It will pay YOU to *Switch to KENKROME!*

To find what it will cost, just fill in and mail the coupon. You'll be under no obligation.

Other wear-resisting alloyed ORO manganese replacement parts

Elevator buckets that last longer, seldom need replacing.

Crawler treads for all sizes and types of shovels and draglines.

Replacement parts for roll and jaw crushers, ball, rod, tube, hammer mills.

Crawler sprockets for most shovels and draglines.

Kensington STEEL COMPANY

KENSINGTON STEEL CO., Dept. P, 505 Kensington Ave., Chicago 28, Ill.
SUBSIDIARY OF POOR & COMPANY • CHICAGO

☐ Please quote prices ☐ Please ask salesman to call

Chain Information { CHAIN NO. ____ TYPE ____ LENGTH ____ ATTACHMENT NO. (OR 2 BOLT PINS) ____ SPACED EVERY ____ PITCH

Sprocket Information { CHAIN NO. ____ NO. TEETH ____ SHAFT DIA. ____ HUB LENGTH ____ { CENTRAL ☐ KEYWAY ____ OFFSET ☐ BUSHED ____

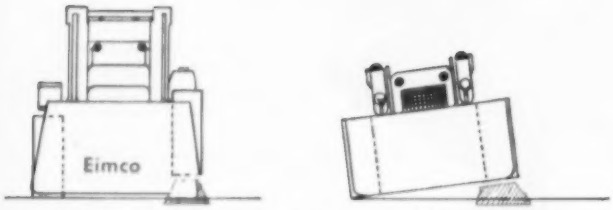
NAME ____

COMPANY ____

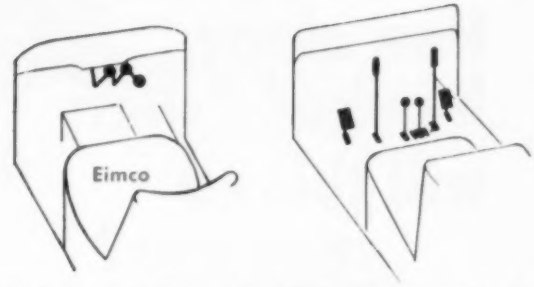
ADDRESS ____

CITY ____ ZONE ____ STATE ____

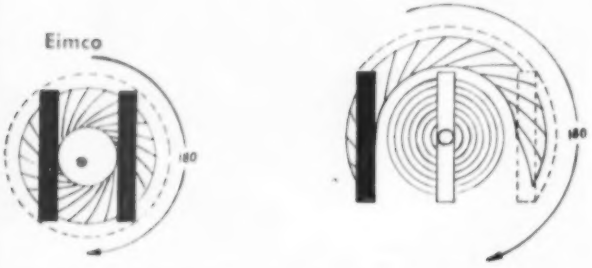
EIMCO
WORLD'S FINEST TRACTOR EXCAVATOR



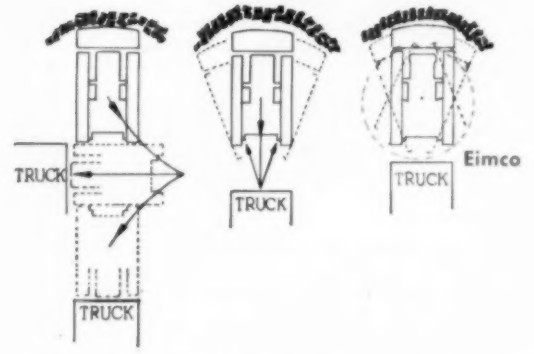
OSCILLATION — with loader attachment — exclusive on Eimco 105, this feature permits better loading on uneven floors in pits or stripping operations.



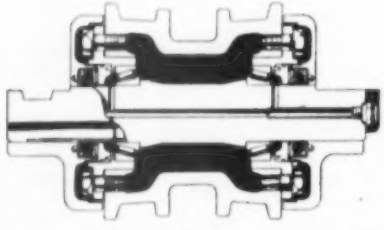
EASY SIMPLE CONTROLS — Eimco's easy finger tip controls give better maneuverability with less effort. Change speeds without stopping — instant reverse.



INDEPENDENT TRACK OPERATION — In a turn one track runs forward, the other reverse, cutting turning radius to a minimum. Eliminates excessive wear on track, rollers, idlers and track frame. On most machines one side is locked and skidded for a sharp turn.



MANEUVERABILITY — Faster loading into haulage units because of Eimco's overhead loading action and independently controlled tracks. Note trucks can be kept closer, cutting haulage time.



THE EIMCO 105 TRACK ROLLER — A one piece cast alloy steel roller with bearing cages and husky shaft on Timken roller bearings completely sealed against dirt and moisture. Careful heat treatment prolongs life and maximum grease capacity assures lubrication.

BETTER VISIBILITY — The operator sits up front where he can see. Loading, bulldozing or pushing are more efficient, eliminate guesswork.

Every feature of the Eimco 105 is designed for maximum customer service with minimum maintenance. One of these features is the full oscillating track EVEN WITH THE LOADER ATTACHMENT. This is an exclusive feature on the Eimco 105 since standard practice in the construction field is to tie the tracks rigidly when a loader is mounted on any tractor unit.

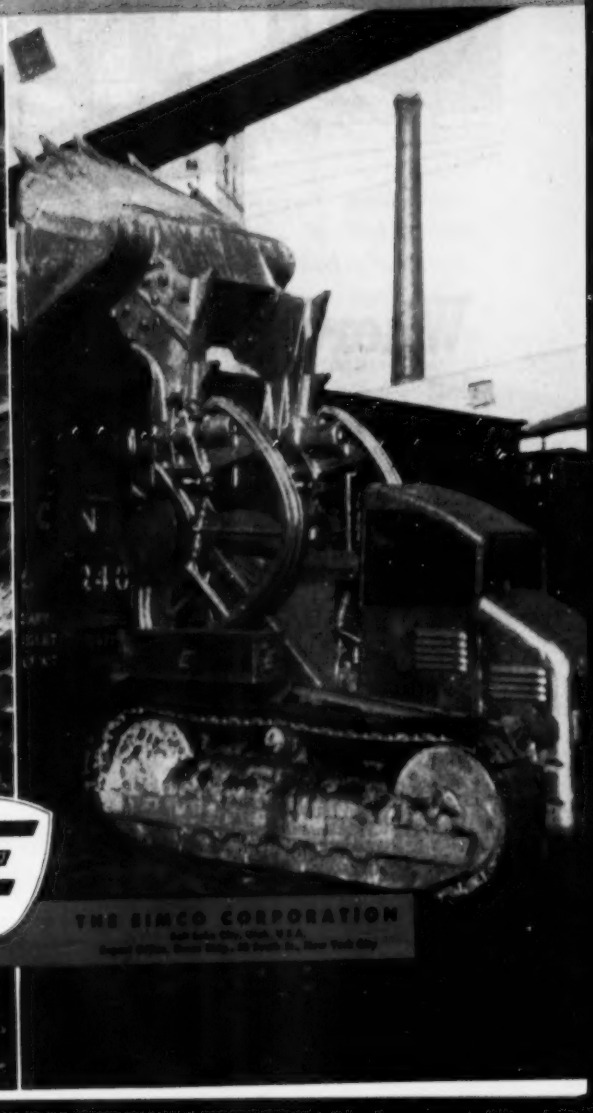
The full oscillating feature prevents excessive frame twist, wear on tracks, rollers, and idlers. Traveling on uneven ground the heavy equalizer bar supports the front end of the tractor and rides freely in its universal type socket in each track roller frame so that either track is free to move up or down without tilting the engine or frame.

This feature provides maximum ground contact under all conditions and maximum drive which is essential in good digging and loading.

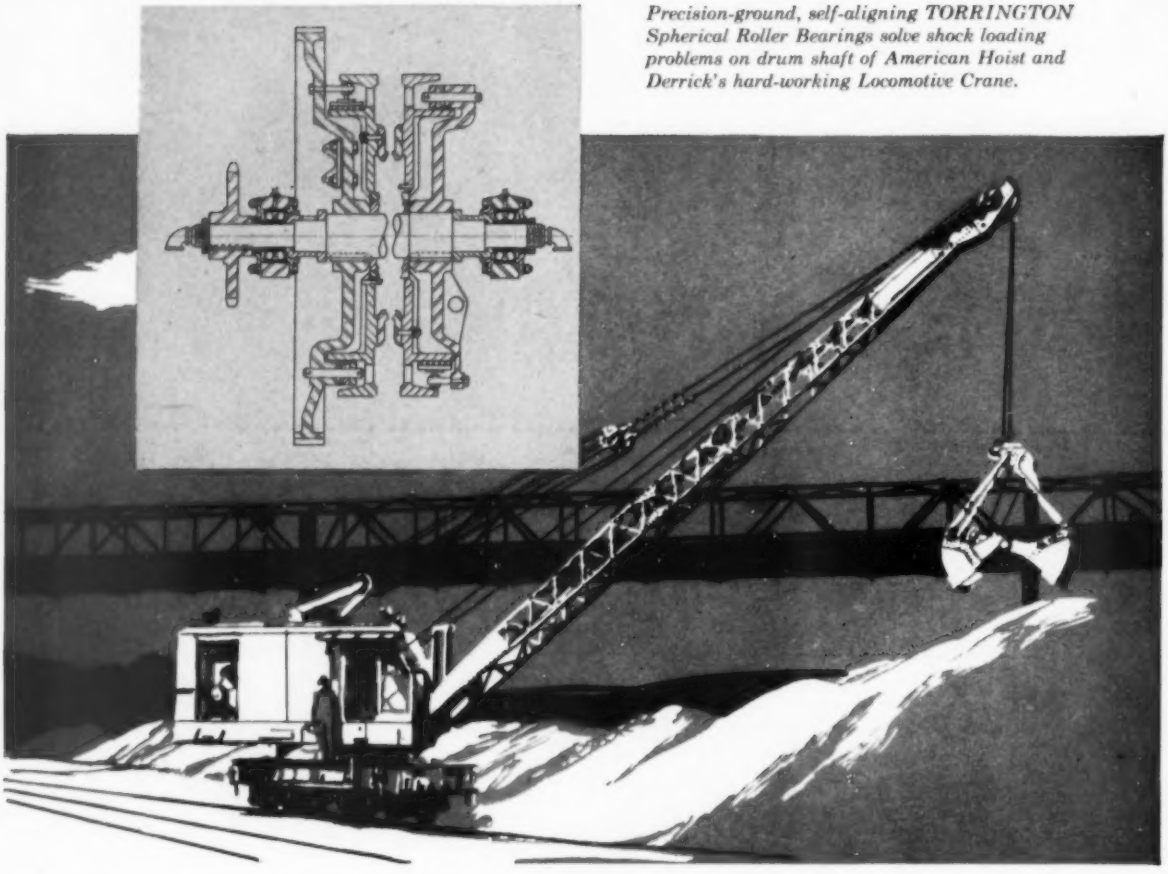
Write for information to The Eimco Corporation, P. O. Box 300, Salt Lake City, Utah.

WITH COST SAVING ADVANTAGES

Above left: Eimco 105 digs in stock pile of chunky limestone. Above right: Two speed bucket mechanism loads light trucks easily and fills big trucks full. Below left: Loading rock from pit. Bottom: Clearing slide area after heavy rain. Below right: High discharge loads into high railroad cars.

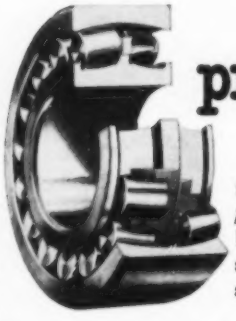


THE EIMCO CORPORATION



Precision-ground, self-aligning TORRINGTON Spherical Roller Bearings solve shock loading problems on drum shaft of American Hoist and Derrick's hard-working Locomotive Crane.

Where the best produce for less!



No doubt about it . . . in today's heavy-duty, high capacity processing equipment, the *best* bearings produce for less. This is why more and more builders and users call for TORRINGTON Spherical Roller Bearings—with these performance features:

Precision-ground contact surfaces—for even load distribution, maximum bearing life. *Accurate geometrical conformity between races and rollers*—for ultimate load carrying capacity. *Carefully heat-treated races and rollers*—for maximum resistance to shock and wear. *Bronze machined cage for each path of rollers*—for freedom of operation. *Integral center flange on inner race*—for positive radial stability and positioning for thrust loads. And self-alignment—for smooth service under shock loads at maximum speeds.

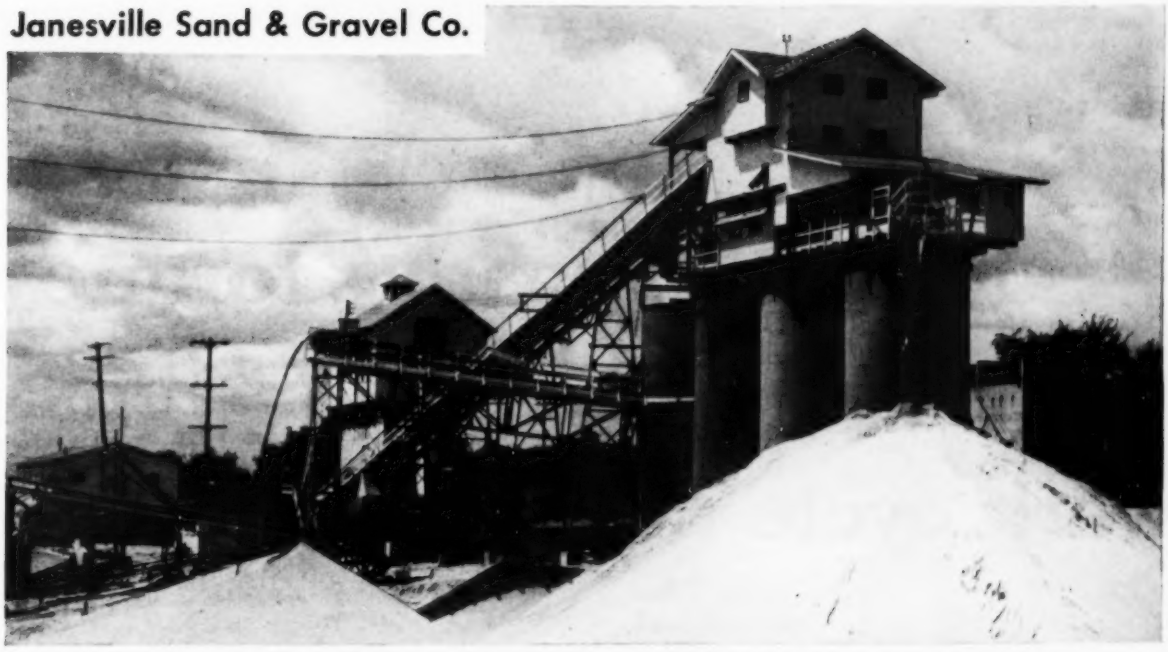
TORRINGTON Spherical Roller Bearings are available from stock with either straight or tapered bore, for shaft or adapter mounting. Use them in your own equipment—from screens and crushers to shovels and cranes—and watch your profits climb.

THE TORRINGTON COMPANY
South Bend 21, Ind. Torrington, Conn.

TORRINGTON SPHERICAL ROLLER BEARINGS

Spherical Roller • Tapered Roller • Cylindrical Roller • Needle • Ball • Needle Rollers

Janesville Sand & Gravel Co.



EVERYTHING WAS RUNNING SMOOTHLY...

UNTIL THIS MACHINE BROKE DOWN!

Lubrication Problem Causes Costly Breakdown; Cities Service Trojan M Greases Solve It!

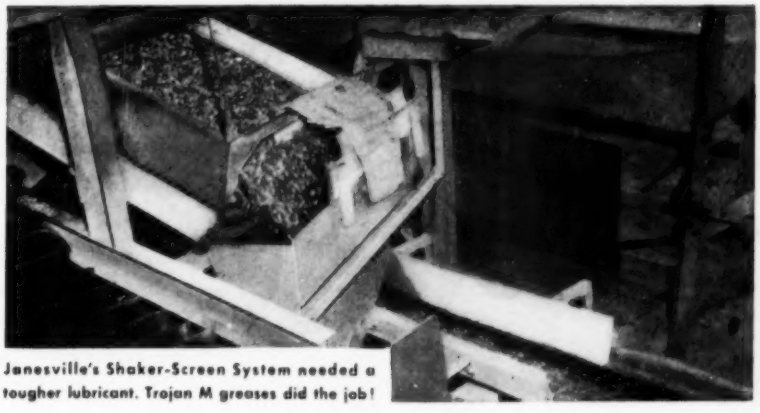
The Janesville Sand & Gravel Company of Janesville, Wisconsin, faced a critical situation. One entire plant was forced to shut-down because of a lubrication problem which caused a breakdown of a costly set of bearings in the shaker-screen system.

Writes Janesville official, George Meyer: "We were not using your (Cities Service) lubricants in this particular plant at the time, however past experience led us to seek your assistance. Your engineer pointed out the reasons for the bearing failure and outlined the vital functions the lubricant must perform in this operation. He recommended Cities Service Trojan M greases as the best solution to our problem. We tried them and found they give us exactly what we want —maximum performance!"

"Shortly after this incident, we were given a complete industrial survey in which your engineer showed us how we could minimize the number of lubricants, increase equipment life, and assure ourselves of proper lubrication. Our experience enables us to recommend the use of Cities Service industrial oils and greases, as well as the technical assistance Cities Service so generously supplies."

CITIES SERVICE

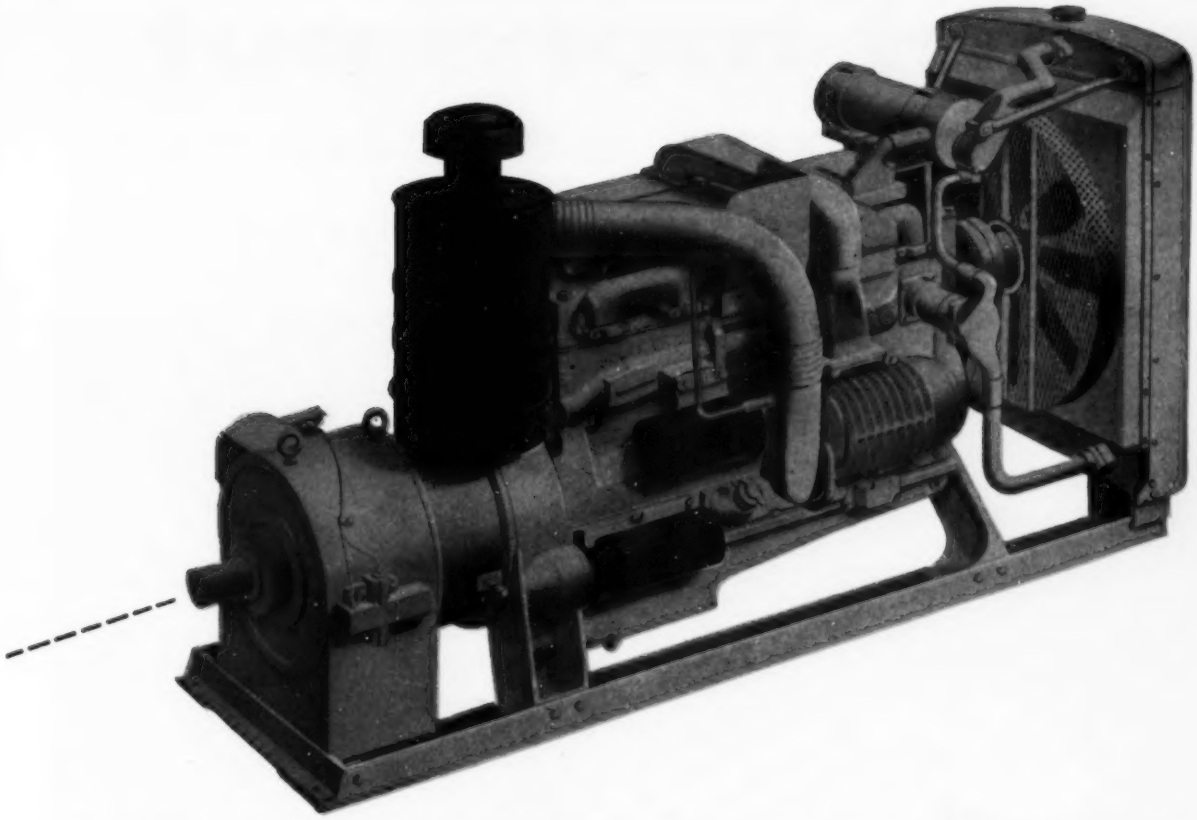
QUALITY PETROLEUM PRODUCTS



Janesville's Shaker-Screen System needed a tougher lubricant. Trojan M greases did the job!

Cummins Diesel - torque converter package speeds work cycle as much as 30%

Gives full utilization of horsepower, minimizes shock



loads, adds to life of shovels, cranes, and draglines

Cummins Torque Converter Packages give smooth steady power over the entire digging or working cycle. Even where digging is the toughest and power requirements fluctuate widely, the Cummins Torque Converter maintains power without lugging, stalling or overspeeding. Crane work, too, can be speeded because loads can be handled more smoothly and accurately.

The output of the Cummins Torque Converter Package is measured by an output shaft governor which determines the exact amount of power required each instant and automatically matches engine speed to load requirements. This increases work capacity, adds to equipment life, saves fuel and engine wear.

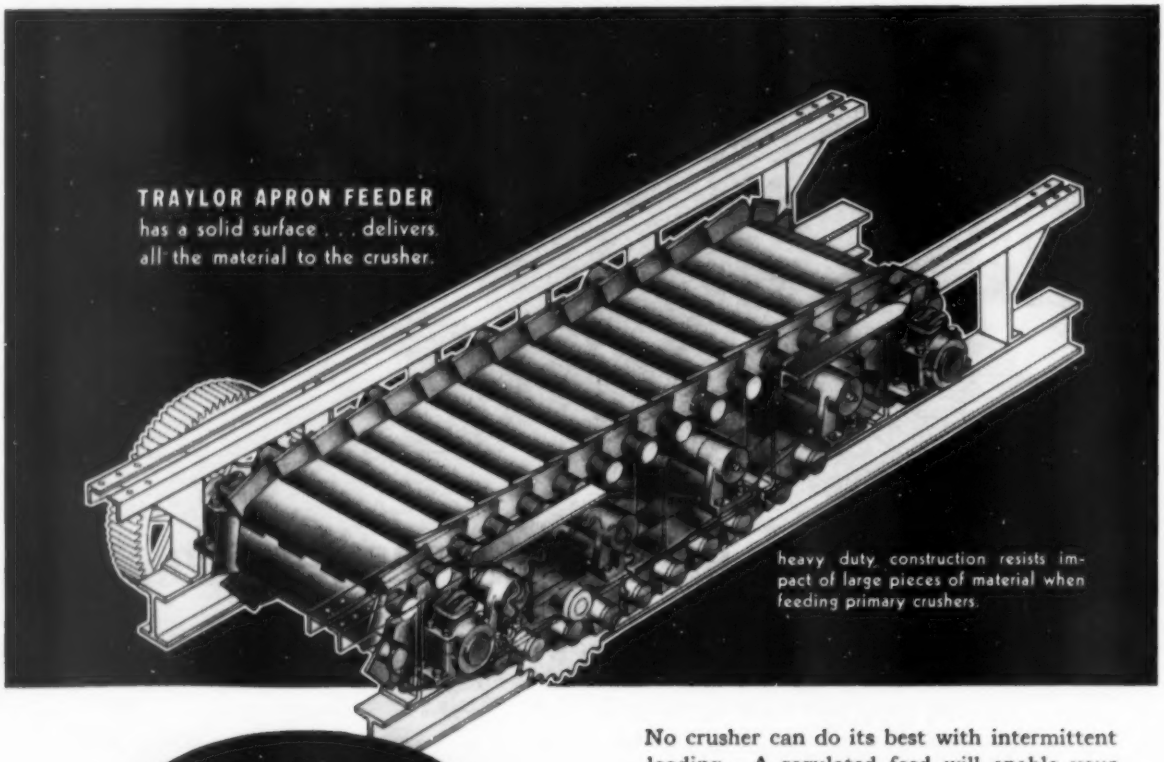
Cummins Diesels, ranging from 60 to 600 h.p., equipped with one of many types of torque converters, can match any job you have. Available as replacement units or in many makes of new equipment.

CUMMINS

Cummins Engine Company, Inc.
Columbus, Indiana

Rugged diesel power (60-600 h.p.)

get more out of your crushers WITH TRAYLOR FEEDERS


TRAYLOR APRON FEEDER
has a solid surface . . . delivers all the material to the crusher.
heavy duty construction resists impact of large pieces of material when feeding primary crushers.

A **Traylor** LEADS TO GREATER PROFITS

TRAYLOR ENGINEERING & MANUFACTURING CO.
646 MILL ST., ALLENTOWN, PA.

SALES OFFICES: New York • Chicago • San Francisco
CANADIAN MFRS: Canadian Vickers, Ltd., Montreal, P. Q.

INCREASED PRODUCTION is one way I can reduce my costs per ton. Send me the facts on Traylor Feeders.

*Name*_____

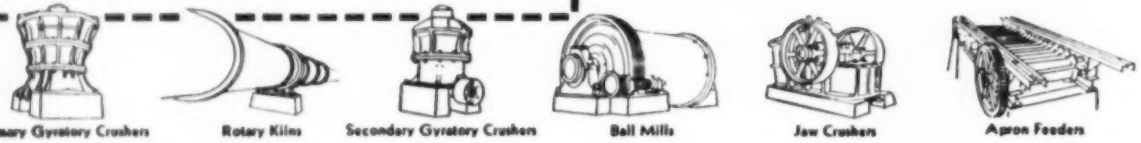
*Company*_____

*Address*_____

*I am operating a*_____ *crusher.*

No crusher can do its best with intermittent loading. A regulated feed will enable your crusher to operate at peak efficiency continuously . . . even double its present output. If you want to get more out of your crushers . . . look into a Traylor Feeder today.

TRAYLOR GRIZZLEY FEEDER scalps material, by-passing fines, so crusher is always producing at greatest capacity.



Primary Gyratory Crushers | Rotary Kilns | Secondary Gyratory Crushers | Ball Mills | Jaw Crushers | Apron Feeders

Stone from this quarry is crushed, then hauled to the Buford Dam project on the Chattahoochee River near Buford, Georgia. The equipment of the S & S Stone Company is lubricated and fueled exclusively with Gulf products.

Gulf Quality Lubricants *and* Fuels

contribute to a smooth over-all operation at the S&S Stone Company, Buford, Georgia

Whatever your operation—whether it's quarrying, crushing, processing, or hauling; and under any operating condition—hot or cold, wet or dry, Gulf lubricants and fuels will help assure you a smoother over-all operation with lower maintenance costs.

Gulf lubricants provide that extra margin of protection against wear. Gulf fuels burn evenly and completely, with fewer engine deposits. These advantages help your equipment perform better, an important factor in any operation.

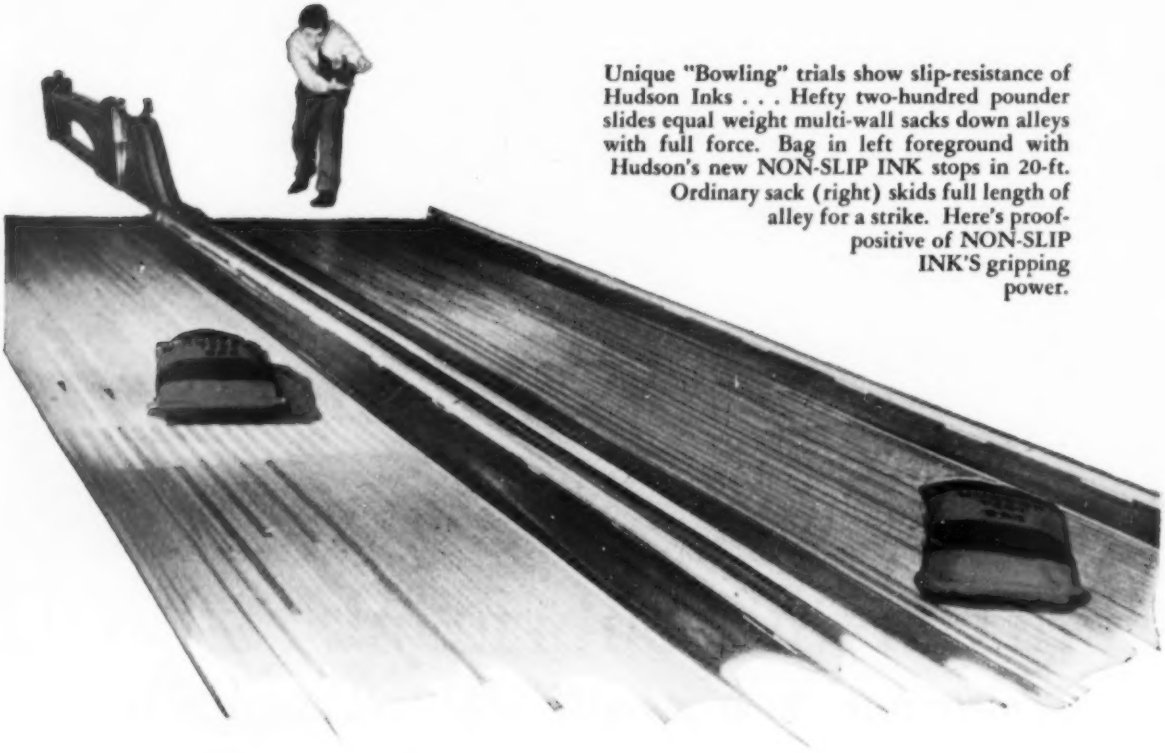
Gulf quality products are available to you in 31 states from Maine to New Mexico. Call your nearest Gulf office today and have a Gulf Sales Engineer recommend the right types and grades for your equipment.

GULF OIL CORPORATION
GULF REFINING COMPANY
1822 GULF BLDG., PITTSBURGH 30, PA.

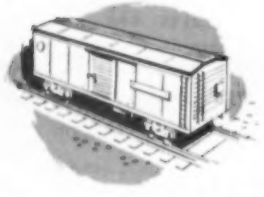
GULF

STOP BAG SLIPPING WITH...

Hudson's New



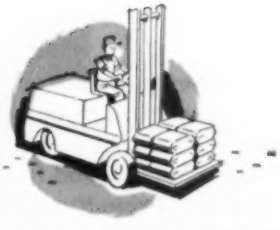
Unique "Bowling" trials show slip-resistance of Hudson Inks . . . Hefty two-hundred pounder slides equal weight multi-wall sacks down alleys with full force. Bag in left foreground with Hudson's new NON-SLIP INK stops in 20-ft. Ordinary sack (right) skids full length of alley for a strike. Here's proof-positive of NON-SLIP INK'S gripping power.



We humped a freight with *half* a carload . . . *not a single Hudson Non-Slip Ink* sack slid or broke!

Do you ship by truck? Buy Hudson Bags with Non-Slip Ink and watch your "Slip-break" losses shrink!

Non-Slip Ink puts an end to sacks sliding under their own weight and falling apart like a house of cards!



Sudden stops no longer mean sudden losses from bags that slip, slide and break!

Non-Slip Ink!

...at no extra cost!

Takes Skid Out of Your Bags!

Again Hudson puts your shipping problems "in the bag" for you . . . with this exclusive, specially developed NON-SLIP ink.

What's more, there's NO EXTRA charge for this ink! Stack this up with all the other superior features of Hudson multi-wall sacks and you know you're buying the best bags money can buy when you make the order out to *Hudson!*

Here's Why:

Best Protection — cuts package loss caused by slipping — Takes rough handling in transit! Hudson strongest by far!

Less Re-Handling — because slipping in packing and storage is virtually eliminated — No double handling.

Free Moving — designed for perfect handling on chutes and conveyors.

Labor Savings — easier and faster to handle — No fumbling with Hudson's "Sure-Grip Multiwalls."

Send for complete story today!

HUDSON PULP AND PAPER CORP.
Dept. P.Q 5-A, 505 Park Avenue
New York 22, New York

***Yes!* We'd like the whole story on Hudson's new NON-SLIP INK.**

NAME_____ TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

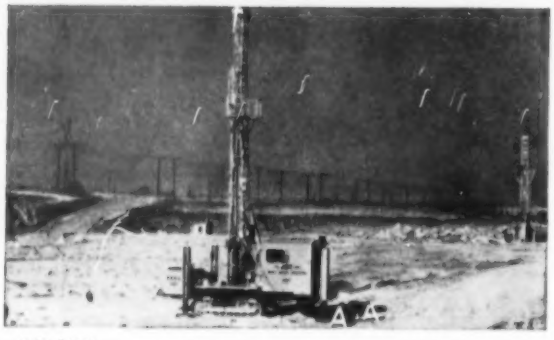
The JOY CHAMPION BLAST HOLE DRILL

CUTS COSTS TO THE BONE!

. . . at the World's Largest Cement Plant

One Joy Heavyweight Champion Blast Hole Drill replaced three churn drills. Blasting preparation was speeded up, labor costs reduced, and lost holes eliminated. Routine production is now 300 ft. of 7⅞" hole per shift in *dense limestone!*

The ability of the machine to "over-drill" to permit over-shooting has also increased quarry output without increasing manpower. The smooth-walled holes have prompted a change from bag powder to modern cartridge loading, for improved fragmentation.



WBD R4634

. . . on one of the World's Largest Canal Jobs

The Joy Heavyweight Champion is used for speed and economy on this large canal job in the "North" country. During the first two months of operation—while crews were being trained—the average drilling rate, including moving and setup time, exceeded 35 feet per hour, in medium hard limestone. Bit life aveaged 1374.4 feet during this training period. ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Galt, Ontario.*

Consult a Joy Engineer

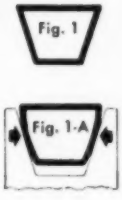
JOY

SINCE 1851—OVER A HUNDRED YEARS OF ENGINEERING LEADERSHIP

if you want lower V-Belt costs—

When a V-Belt bends, you can feel its sides change shape.

just make this simple test

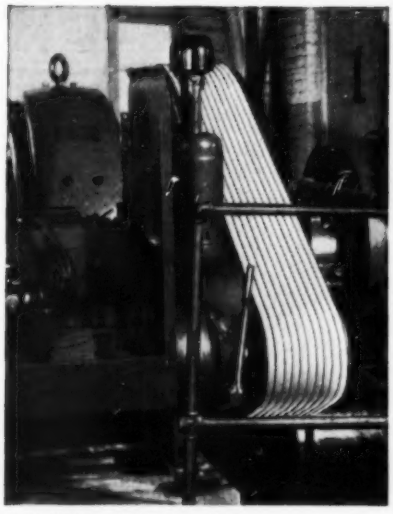


Take *any* V-belt that has *straight* sides (Fig. 1). Bend that V-belt while you grip its sides with your fingers. You will *feel* the sides *bulge out* (Fig. 1-A). Clearly, that out-bulge forces the belt to press *unevenly* against the V-pulley—and this *concentrates* wear at the points shown by arrows (Fig. 1-A).

Now bend a Gates Vulco Rope with CONCAVE SIDES (Fig. 2)

(U.S. PAT. NO. 1813698)

Instead of *bulging*, the precisely engineered CONCAVE SIDES merely *fill out* and become perfectly straight. This belt, when bent, *precisely fits* its sheave groove (Fig. 2-A). The sides of the Gates Vulco Rope press *evenly* against the V-pulley. Therefore, wear is distributed *uniformly* across the *full face* of this belt —resulting in *longer* belt life and *lower* belt *costs* for you!



Typical Gates Vulco Rope Drive —the Gates V-Belts are built with Concave Sides to insure longer belt wear.

When you buy V-belts, be sure to get the V-belt with the Concave Sides—the Gates Vulco Rope!

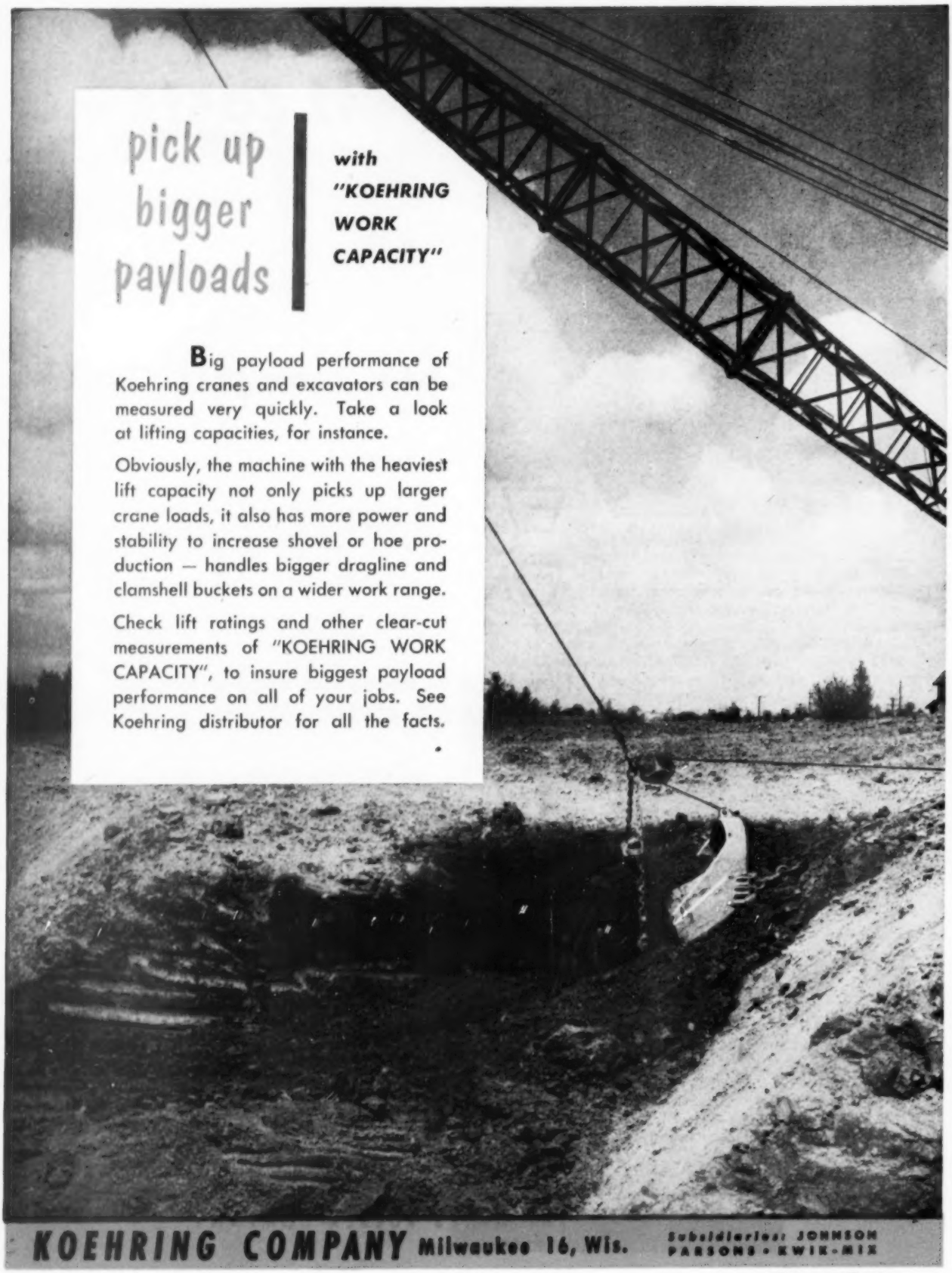
Gates VULCO ROPE DRIVES

REG U S PAT OFF

Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and Canada, and in 70 other countries throughout the world.

THE GATES RUBBER COMPANY
DENVER, U.S.A.

CS-543



pick up bigger payloads

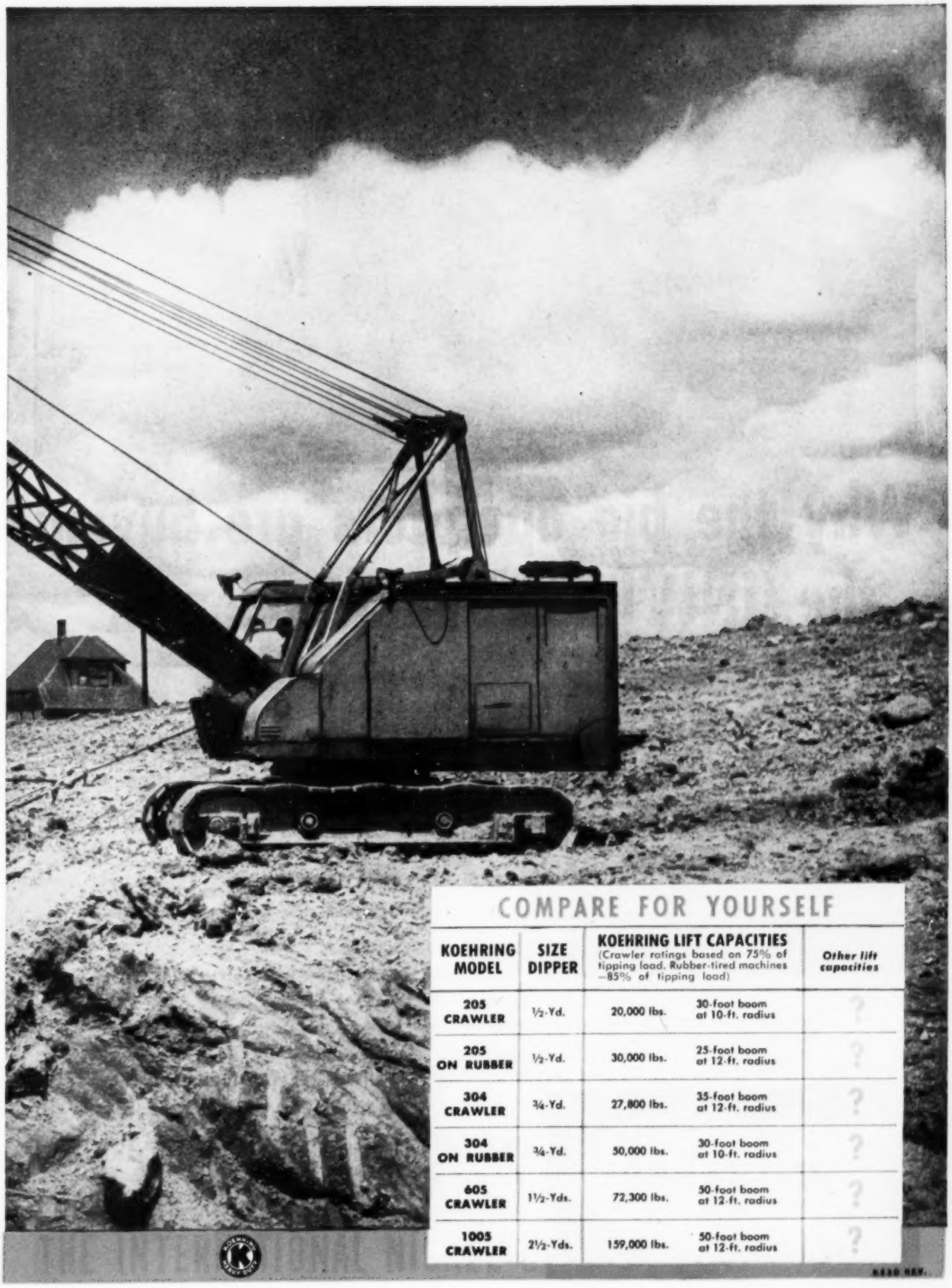
with "KOEHRING WORK CAPACITY"

Big payload performance of Koehring cranes and excavators can be measured very quickly. Take a look at lifting capacities, for instance.

Obviously, the machine with the heaviest lift capacity not only picks up larger crane loads, it also has more power and stability to increase shovel or hoe production — handles bigger dragline and clamshell buckets on a wider work range.

Check lift ratings and other clear-cut measurements of "KOEHRING WORK CAPACITY", to insure biggest payload performance on all of your jobs. See Koehring distributor for all the facts.

KOEHRING COMPANY Milwaukee 16, Wis. Subsidiaries: JOHNSON PARSONS • KWIK-MIX



COMPARE FOR YOURSELF

KOEHRING MODEL	SIZE DIPPER	KOEHRING LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines —85% of tipping load)		Other lift capacities
205 CRAWLER	½-Yd.	20,000 lbs.	30-foot boom at 10-ft. radius	?
205 ON RUBBER	½-Yd.	30,000 lbs.	25-foot boom at 12-ft. radius	?
304 CRAWLER	¾-Yd.	27,800 lbs.	35-foot boom at 12-ft. radius	?
304 ON RUBBER	¾-Yd.	50,000 lbs.	30-foot boom at 10-ft. radius	?
605 CRAWLER	1½-Yds.	72,300 lbs.	50-foot boom at 12-ft. radius	?
1005 CRAWLER	2½-Yds.	159,000 lbs.	50-foot boom at 12-ft. radius	?

Why the big operators are buying the UNIVERSAL 880 Senior "R"

No other gravel crushing plant in its weight class can challenge the Senior "R"'s output.

1. **More Tonnage From Screen —** 4' x 12' screen with full 48 square feet of screening area **plus** inclined mounting gives 25% or more output.
2. **Top Primary Output —** Universal 1036 overhead eccentric force feed jaw crusher. The top producing jaw on the market.
3. **Maximum Secondary Production —** 30" x 24" roll crusher. The largest offered in a plant of this weight. Feed design uses the full 24" width of the roll shells.
4. **Big 30" Conveyors —** You need extra wide conveyors to handle the Senior "R"s high output . . . and you get them! Channel frame design for ruggedness — not formed frames.
5. **All This In A Portable Plant —** designed to meet state highway weight restrictions.
6. **Low Initial Cost —** Low maintenance.

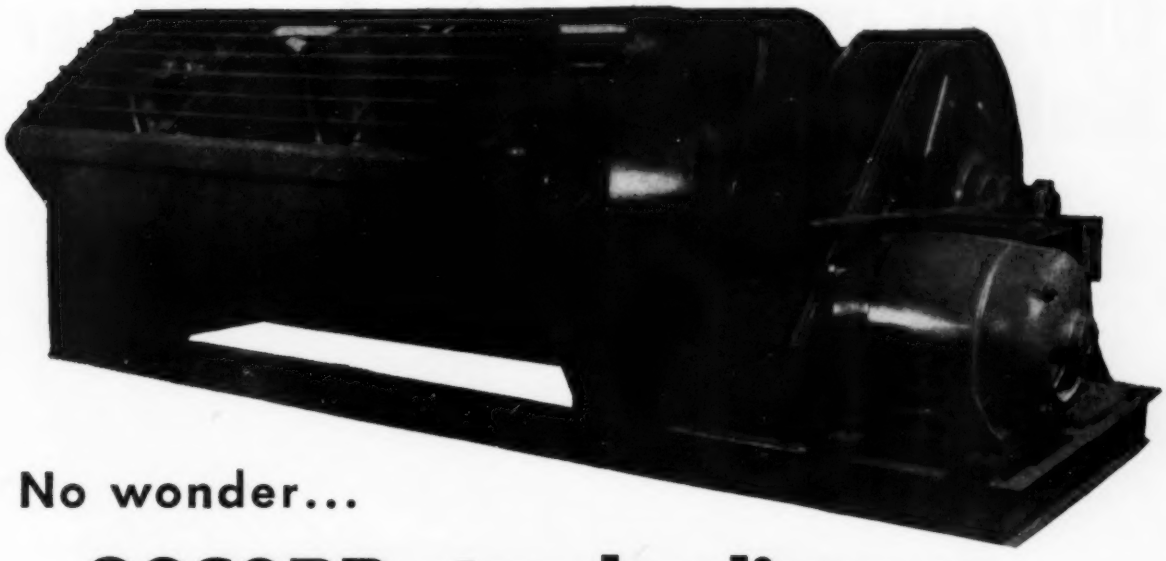
NO OTHER PLANT HAS ALL THESE FEATURES

These are but a few of the reasons why the big operators, who keep a careful check on operating costs and production records, buy the Senior "R". Compare it feature for feature with other plants and prove this to yourself . . . UNIVERSAL'S THE BUY! For complete information see your nearest Universal distributor, or write to Universal Engineering Corporation, 619 C Avenue, N.W., Cedar Rapids, Iowa.

PETTIBONE
UNIVERSAL
In Cedar Rapids Since 1906

UNIVERSAL ENGINEERING CORPORATION
619 C Avenue, N.W., Cedar Rapids, Iowa
A Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division St. Chicago 51, Illinois

New 75 cu. ft. mixer... one of the largest built by any concrete block machinery manufacturer... utilizes Ni-Hard liners and four big Ni-Hard blades to assure complete mixing in minimum time. Powered by a 75 hp motor, ample for the biggest batch, it can also handle light weight aggregates fast enough to keep up with high production block machines.



No wonder...

GOCORP standardizes on Ni-Hard blades and liners

for their batch mixers

The Gene Olsen Corporation of Adrian, Michigan, is a pioneer manufacturer of concrete products equipment, known far and wide under the name "GOCORP".

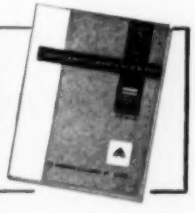
In their drive for better mixing at lower cost, GOCORP engineers examine and test all sorts of metals, right in the field...

And here is one of their significant conclusions: *Ni-Hard provides abrasion resistance at lowest ultimate cost.*

Yes, Ni-Hard® is a material that keeps output high, and reduces idle machine time and man-hours. You, too, can minimize needless shut-downs for repair or replacement by utilizing Ni-Hard instead of outmoded white or gray iron castings. Investigate how the abrasion-resistance of Ni-Hard can save money and labor in your plant.

Two sets of Ni-Hard blades ... in the big "75" result in better balance, faster mixing and reduced stresses. In addition to Ni-Hard blades and liners, GOCORP also utilizes Ni-Hard dust hubs and rings for better seal as well as maximum resistance to wear.

The completely revised third edition of "Engineering Properties and Applications of Ni-Hard" is now available. Write for your copy today.



THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y.

More Bucyrus-Eries are Used for Output in ROCK than Any Other Make of Excavator . . .

There's a reason why you'll find more Bucyrus-Erie excavators on rock work than any other make! Featuring Individual Design for each model in the line, they're built to take the beating of quarry work shift after shift, year after year.

Individual Design assures a perfect match of the machine to its rated load. Front end, main machinery, power unit, and mounting are all perfectly matched for smooth coordination of all functions, for fast work cycles, and for long life.

Investigate the additional advantages of Bucyrus-Erie *individual design* — see what they can mean to you in terms of higher overall output, lower overall costs. Get the facts from your nearby Bucyrus-Erie excavator distributor. 26E54

3/8- to 4-yd. Gasoline, Diesel, Single Motor Electric Excavators

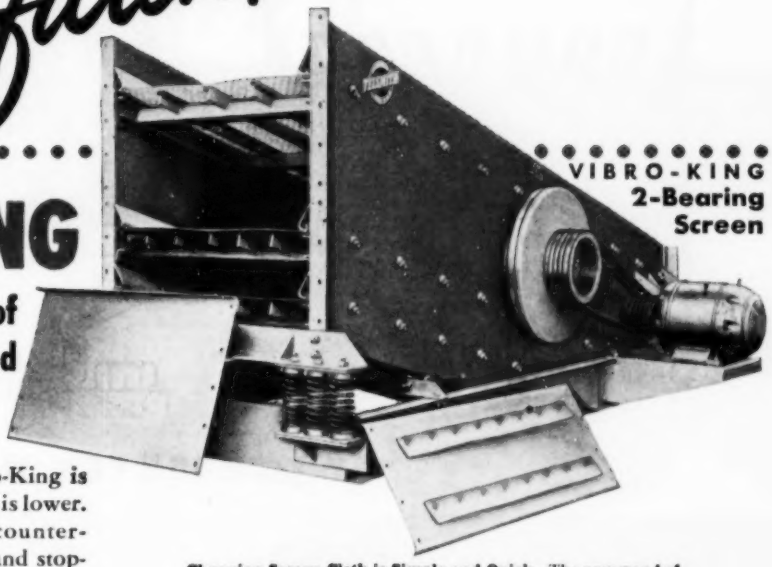
SOUTH MILWAUKEE **BUCYRUS ERIE** WISCONSIN

TELSMITH

more efficient screening

VIBRO-KING

For Finished Screening of Medium and Small Sized Aggregate



VIBRO-KING
2-Bearing
Screen

With its two bearings, the Vibro-King is simpler, more efficient, and upkeep is lower. Telsmith-patented automatic counterweights assure smooth starting and stopping as well as exceptionally smooth operation. Its circular screening movement is uniform everywhere on the screen cloth, and is constant under any load. Entire vibrating mechanism, including vibrating unit and screen cloth, floats on nests of springs. Welded and reinforced main frame is *horizontal* for rigidity and easy installation. Cable suspension, if desired. Six sizes, 1, 2, or 3 decks.

Changing Screen Cloth is Simple and Quick—The upper end of the Vibro-King is readily removable, making it a much easier job to change screen cloth and saving a great deal of time.

Screen Cloth Mounting—At customer's option—screen cloth may be mounted in rubber on steel screen trays; or stretched over steel screen supports—protected by rubber—on any deck or decks.

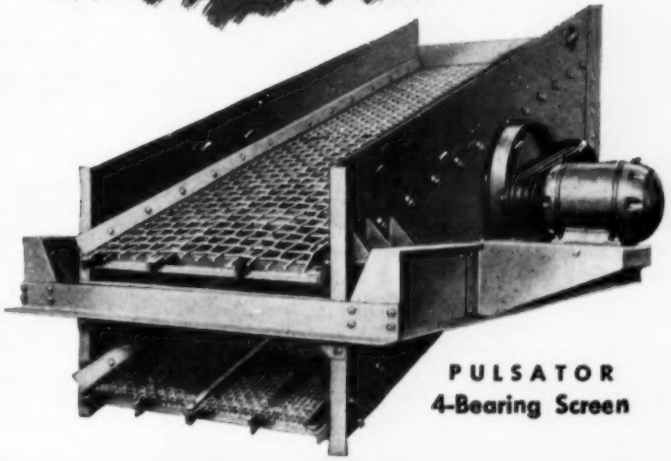
SEND FOR BULLETIN 266

PULSATOR

For Heavy-Duty Scalping

A four-bearing, heavy-duty vibrator . . . for all kinds of screening, especially scalping, or large sized aggregate . . . Pulsator's circular movement gives uniform, efficient screening on all decks and under heaviest loads. The best alloy steels, the finest antifriction bearings, protected by both labyrinth and piston ring seals, give longer life and lower upkeep. Eleven sizes, with 1, 2 or 3 decks.

V-3-R



PULSATOR
4-Bearing Screen

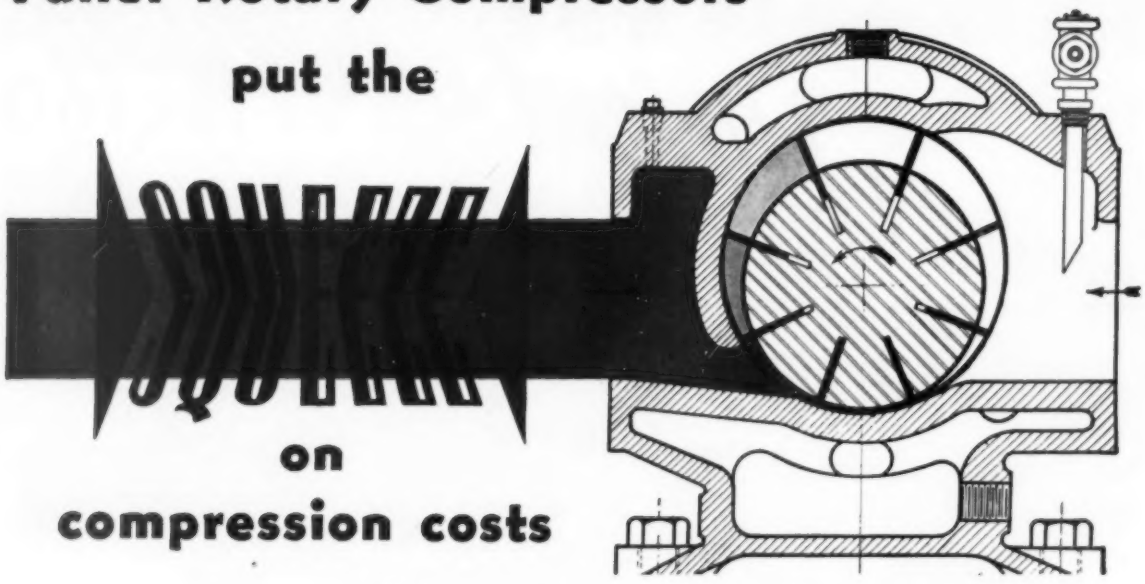
SMITH ENGINEERING WORKS, 504 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Address: Sengworks, Milwaukee

51 East 42nd St. New York 17, N. Y. • 211 W. Wacker Drive Chicago 6, Ill. • 713 Commercial Trust Bldg. Philadelphia 2, Pa. • 238 Main Street Cambridge 42, Mass. • Boehck Eqpt. Co. Milwaukee 3, Wis. • The McLean Co., 3525 Lakeside Ave. Cleveland 14, Ohio

Marens Eqpt. Co., New Hudson, Mich. • Rish Eqpt. Co., Cincinnati 14, & Portsmouth, Ohio—Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 10, Va. Robert S. Bafley, 816 W. 5th St., Los Angeles 17, Calif. • Mines Eng. & Eqpt. Co., San Francisco 4, Calif. • Clyde Eqpt. Co., Portland 9, Ore., & Seattle 4, Wash.

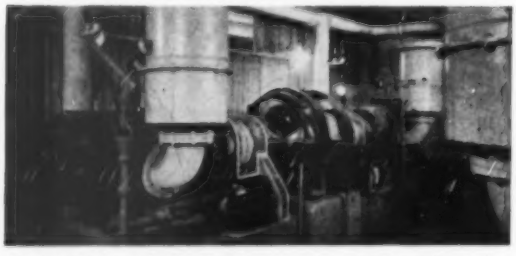
Fuller Rotary Compressors put the



on compression costs

...for pressures up to 125 lb.

Three Fuller Rotary Single-stage Compressors. Capacity each 1400 c.f.m., 19-lb. pressure.



Fuller Rotary Single-stage Duplex Compressor. Capacity 2010 c.f.m., 35-lb. pressure.

Fuller Rotary Two-stage Compressor. Capacity 1665 c.f.m., 100-lb. pressure.

When you consider all the many uses you have for compressed air, you should give careful thought to the best way to get compression with dependability, plus minimum cost and attention—selection of the proper compressor at the required pressures to do the work in the most efficient manner. Fuller builds the compressor that has *earned* a reputation for dependability and long life—for pressures up to 125 psig.

Fuller Rotaries have so many inherent advantages that they warrant your closest examination. Free from reciprocating parts, with no valves to leak or seats to grind, no unbalanced forces to set up vibration, they assure low-cost, smooth-flow operation during their long life. And, they give you *original, maintained capacity*.

Check your compressed-air needs . . . a Fuller engineer, specializing in compressed-air engineering, will give you the *right* recommendation to enable you to produce air efficiently, and at the lowest possible cost. Write now.

FULLER COMPANY, Catasauqua, Pa.

Branch Offices

Chicago • San Francisco • Los Angeles • Seattle • Birmingham

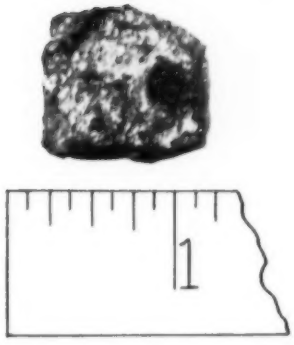
Fuller

C-237
2157

Pioneers of high-efficiency vane-type rotary compressors

CAN *You* PRODUCE 60 T. P. H.

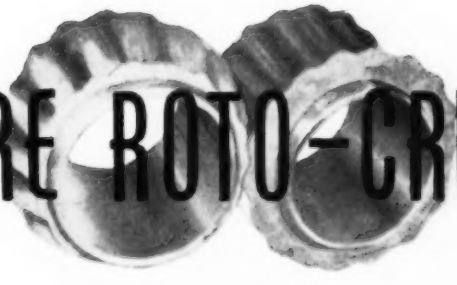
OF



FROM

USING ONLY 33 HORSE POWER?

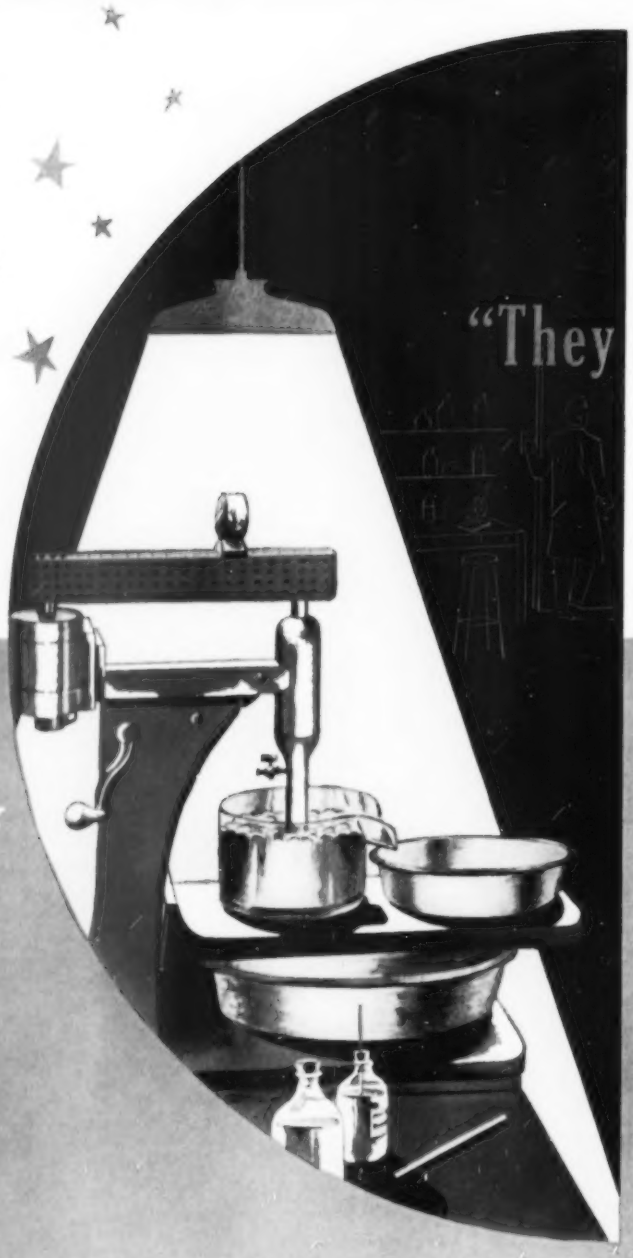
you can with



LATTURE ROTO-CRUSHER

WALDRIP ENGINEERING CO.

HOLLYDALE CALIFORNIA



"They Slept on the Problem"

and learned how to produce low-iron glass sand with Cyanamid 800 Series Promoters

Hours of testing had come to naught. Flotation with 800 Series Cyanamid Promoters would *produce low-iron glass sand at Del Monte Properties but 65% recovery was far too low. Puzzled and tired, the Pilot Plant Superintendent and the Cyanamid Field Engineer decided "to sleep on the problem". But, on a hunch, they left a batch of sand to scrub at 50% solids in a lab flotation machine.*

Next day, instead of white sand, they found a black pulp . . . and the key to a workable process. Prolonged attrition had removed an iron-bearing clay. Flotation of the scrubbed sand now yielded 95% recovery of an 0.055% Fe_2O_3 glass sand!

Del Monte Properties at Pebble Beach, California is an excellent example of the use of chemical flotation to convert beach and dune sand into four valuable, custom-built products.

Raw sands, comprising equal parts of quartz and high-alumina minerals, average 0.12 to 0.15% Fe_2O_3 and 11.5% Al_2O_3. Scrubbed in specially designed attrition machines, these sands are then deslimed, conditioned and the iron-bearing minerals floated, leaving behind 95% of the feed in a finished product that assays 0.06% Fe_2O_3 and 10.76% Al_2O_3.

Flotation reagents per ton include: 0.45 lb. sulfuric acid, 0.40 lb. fuel oil, 0.01 lb. pine oil, 0.55 lb. AERO* Promoter 801 and 0.45 lb. AERO Promoter 825.

Subsequent flotation in another section produces a high-grade feldspar concentrate and a practically-pure (99.07% SiO_2) quartz tail-

*Trade-Mark

ing. Feed to this section can be split to control the quantity of iron tailings floated, thereby controlling alumina in the end product. Del Monte Special "77" Sand, for instance, containing only 6.50% Al_2O_3 and 0.051% Fe_2O_3 commands an active, premium market.

Cyanamid 800 Series Promoters are now being used to beneficiate glass sands, feldspar, garnet, barite, kyanite, rhodochrosite and similar non-metallic minerals. Cyanamid also offers Heavy-Media Separation and Dutch State Mines Cyclone Separator Processes, both of which merit investigation for non-metallic mineral concentration by gravity difference.

With the practical help of a Cyanamid Field Engineer experienced in up-grading low value non-metallics, you may be able to cut costs by less-selective mining, work currently sub-marginal deposits or ship higher-grade end products. Preliminary discussion entails no cost or obligation. Why not write, outlining your problem?

It will pay you to talk with a Cyanamid Field Engineer if you mine or contemplate mining:

Andalusite · Barite · Bauxite · Cement Rock · Coal · Chromite Diamondiferous Ground · Dolomite · Feldspar · Fluorspar Garnet · Glass Sands · Graphite · Gravel · Gypsum · Ilmenite · Iron Oxides · Kyanite · Magnesite · Manganese · Mica · Olivine Perlite · Phosphate Rock · Potash · Rhodochrosite · Sillimanite Salt · Scheelite · Spodumene · Vermiculite · Wolframite

AMERICAN Cyanamid COMPANY

MINERAL DRESSING DEPARTMENT

30 ROCKEFELLER PLAZA, NEW YORK 20, NEW YORK

"No other Loader can do so much for so little!"

Reports Judge Roy L. Sanderlin, Drew County, Arkansas on his Athey ML4 MobiLoader.

With an extensive program of road improvement under way, Drew County, Arkansas, is using many thousands of yards of gravel. The surfacing material is being loaded from a narrow riverbank pit that will supply more than 35,000 cubic yards. The county's Athey ML4 MobiLoader is loading out the material at the rate of 450 cu. yds. in an 8-hour day—working in its straight-line cycle that eliminates excessive clutch and track wear.

The work is under the supervision of Judge Roy L. Sanderlin, who reports: "This is our second Athey MobiLoader and I don't think there is another loader that will handle as much material as fast and at such a low cost as this ML4-D4 team. It's the only equipment for the job. We'll build and keep up as many miles of roads as counties with bigger budgets!"

If your loading operation is hampered by a budget problem let an Athey ML4 MobiLoader solve both. You'll get greater production at lower cost—and your Athey-Caterpillar Dealer can supply facts and figures to prove it. Call on him or write!

Athey

ATHEY PRODUCTS CORPORATION
5631 West 65th Street Chicago 38, Illinois

Don't Gamble!

USE

FARRELL-CHEEK INDUSTRIAL CHAIN

FARRELL-CHEEK STEEL CO.

MANUFACTURERS OF HIGHEST QUALITY ELECTRIC FURNACE CARBON AND ALLOY STEEL CASTINGS

FARRELL'S CARBON STEEL CASTINGS

FARRELL'S HARD EDGE STEEL CASTINGS

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CRANE WHEELS
Overhead, Gantry, Monorail, Ingot Car, Charging Machine.

ELEVATOR, CONVEYOR PARTS
Sprockets, Traction Wheels, Chains, Buckets, Rollers, Idlers, Bushings.

HEAVY HARDWARE
Complete Line Wire Rope Fittings and Cutters, Bar Benders and Cutters.

GEARS AND PINIONS
"True Tooth" Gears and Pinions, Sheaves and Wheels.

RAILROAD CASTINGS
Locomotive and Car R. R. Specialty Castings.

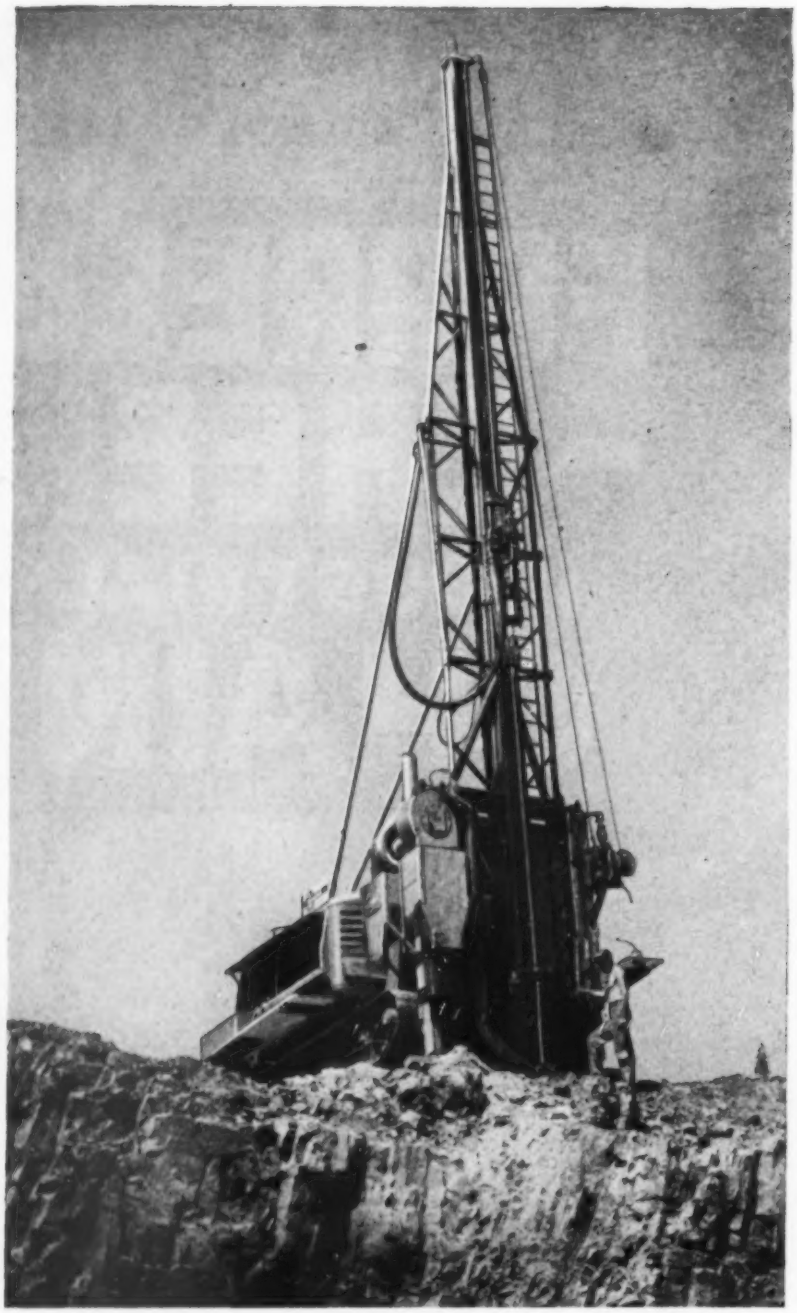
STOKER PARTS
Feed Screws, Furnace Tools. Flanged Pipe, etc.

YOUR INQUIRY WILL PROMPTLY BRING DETAILED INFORMATION PERTAINING TO ANY OF THE ABOVE FARRELL-CHEEK PRODUCTS

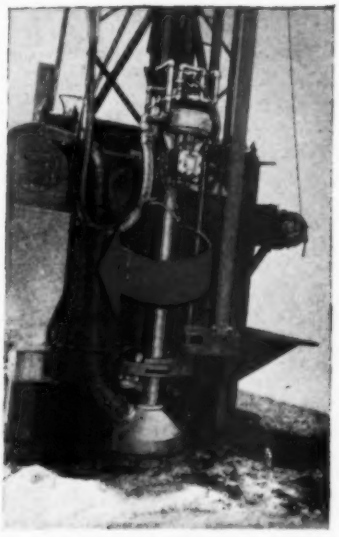
SANDUSKY, OHIO

NOW — with

ROTARY



Ingersoll-Rand Quarrymaster, with percussion-type drill, sinking primary blast holes on a large construction project. Note how close to the face the holes can be drilled.



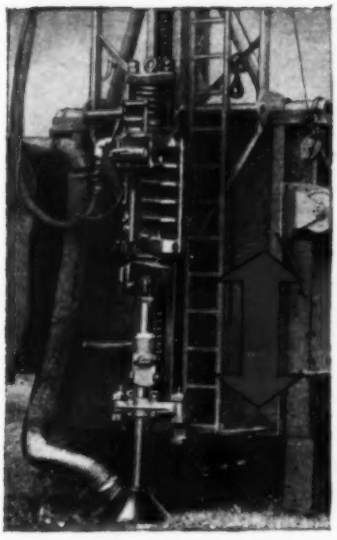
Power for rotary drilling is supplied through powerful twin multivane reversible I-R air motors. Drills 20 to 150 feet per hour depending on the rock. Hole cleaning, as in the percussion drill, is automatic and done by air.

Uses rotary type bits up to 9" in diameter —These are the same familiar oil field type bits used the world over.

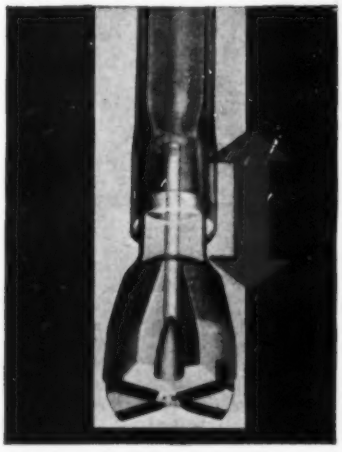
ROCK DRILLS • COMPRESSORS • AIR TOOLS • TURBO BLOWERS

One Machine . . .

OR PERCUSSION DRILLING



Heart of the percussion machine is this powerful air-operated piston drill that strikes 200 blows per minute. Drilling speeds range from 10 to 50 feet per hour. Hole cleaning is done by air and is entirely automatic.



Carset bit life is 700 to 1600 feet in granite —up to 14,000 feet in soft, less abrasive formations. Bits up to 6½" diameter.

NEW UNIVERSAL QUARRYMASTER

permits fastest drilling in any type of ground!

Here is the first *universal drill*—a completely self-contained, self-powered and self-propelled machine with interchangeable rotary and percussion drilling units. It enables you to use whichever drilling method is best suited to the type of ground being worked.

When equipped with the powerful *piston drill*, the Quarrymaster can drill any type of material from the hardest rock to consolidated top soils and hard pans. When a *rotary* drilling head is applied it is ideal for the softer or less abrasive rocks and overburdens.

In open pit mining whether your cap rock is hard and the ore soft, or vice versa, the Quarrymaster will drill either one at the fastest rate and the cheapest way possible. If you are a drilling contractor or quarry operator, the dual principle gives you the right drill for any rock conditions, anywhere.

Conversion from one type to the other takes but a few hours and consists of simply removing one drill from the tower and replacing it with the other.

The Ingersoll-Rand Quarrymaster is reducing primary blast-hole drilling costs all over the world. Now, with the new Universal Design, it offers still greater opportunities for saving time and expense on *any* deep hole job!

Call your Ingersoll-Rand branch office today for complete information on the new Quarrymaster. Or write for your copy of Bulletin No. 4153.

Ingersoll-Rand

11 Broadway, New York 4, N. Y.

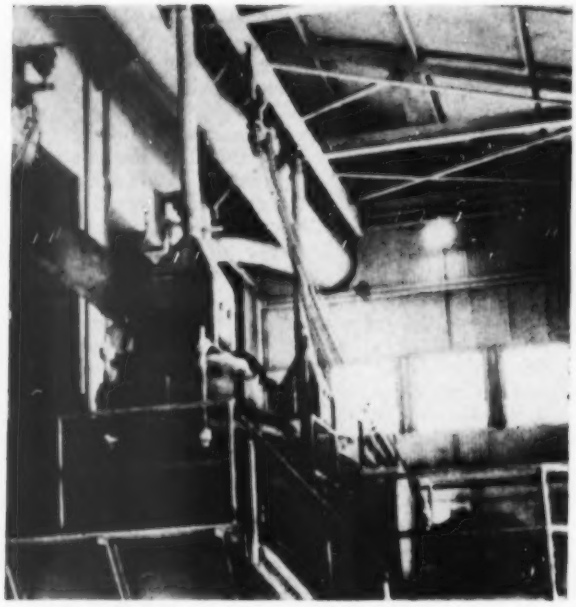
5-73

• CONDENSERS • CENTRIFUGAL PUMPS • OIL & GAS ENGINES

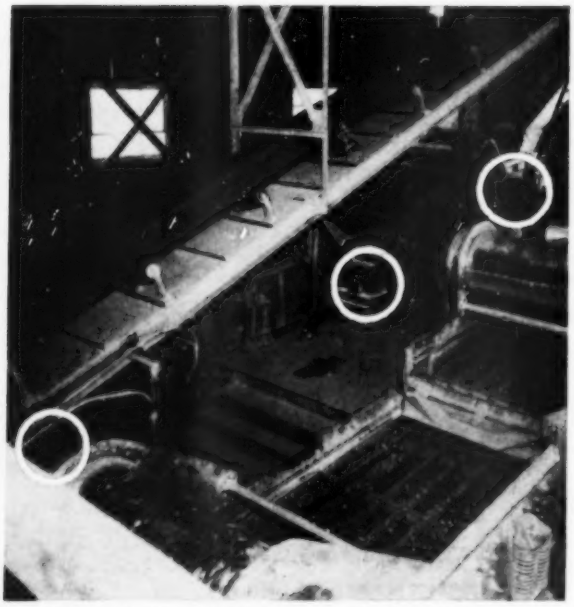
ENGINEERING REPORTS:

ENTIRE PLANT of Dolese Bros. Co. is operated with General Electric motors and control, co-ordinated to meet diverse, yet exacting specifications. Shown here are earthen ramp and the crushing building (right) and stockpiling facilities (left).

New 750-t.p.h. crushed-stone plant



1 STONE COMES TO THIS CRUSHER on conveyor powered by G-E 100-hp a-c motor (not shown). Solenoid trip (top left) controls feed automatically. Crushed stone is then removed by conveyor driven by G-E motor at lower right.

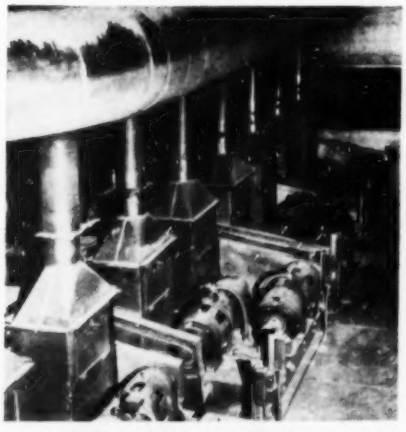


2 SCREENING IS CONTINUOUS to maintain high production rate. All screens are operated by G-E Tri-Clad* totally enclosed motors (circled), which keep production going under all operating conditions.

*Reg. trade-mark of General Electric Company

MASTER CONTROLS for whole operation are easily handled by one man. Desk-type benchboard controls screening process; vertical panel controls all blending and loading. All controls are located in air-conditioned central control room.

accurately controlled by one man



3 FEEDERS SUPPLY BLENDING process by belts driven by this battery of General Electric d-c gear-motors, powered and controlled by G-E speed-variators.

Dolese Bros. Co. plant completely electrified with G-E drives for peak output

One of the most modern crushed-stone plants in the world, Dolese Bros. Co. of Richard Spur, Okla., relies on an electrically co-ordinated plant-flow system for balanced production at top capacity of 750 t.p.h. Nerve center for this fast-moving operation is General Electric centralized control, which accurately integrates all production operations with the Hewitt-Robins materials-handling system.

Each process is pre-set, and controlled with finger-tip sensitivity from the central control room to meet any one of an almost infinite variety of stone-size combinations. Money-saving, production-boosting G-E motors and generated voltage control are used for the entire system. Result is extra flexibility and smooth flow of production through the plant.

FOR HIGHER OUTPUT, MODERNIZE ELECTRICALLY. To eliminate bottlenecks and increase production in *your* plant, G-E application engineers are ready to work with you and your equipment manufacturers. Contact your nearest G-E Apparatus Sales representative today. General Electric Company, Schenectady 5, N. Y. 658-12

Engineered Electrical Systems for the Rock Products Industry

GENERAL ELECTRIC

IT'S HERE! The new

FULL 1-YARD SHOVEL-CRANE

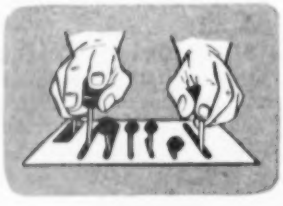
with *Speed-o-Matic*® power hydraulic control!

Now, for the first time in the heavy-duty 1-yd class, you can buy a machine combining unsurpassed productive capacity and maneuverability with practical transportability. In fact, an LS-98 with Speed-o-Matic control gives you the greatest productive capacity of any shovel-crane conveniently transportable over most state highways.

Two years of rugged field testing proved the LS-98 outstanding from both productive and service cost standpoints. It's an ideal machine for widely scattered operations as well as for large production jobs. Fully convertible, the LS-98 is your answer to handling more work at less cost.

Here are only a few of the many important features that cut costs . . . boost output

Included as standard equipment are foolproof power steering and independent rapid boom hoist. These and many other advantages enable you to secure greater output at lower cost.



Fingertip, Speed-o-Matic control is easy on the operator . . . cuts end-of-the-shift letdown . . . helps increase output by up to 25%! Smooth, instant response eliminates jerk, jump or lag.

Greater usable hp, more live weight The LS-98 advanced design insures more efficient application of engine horsepower . . . incorporates greater live weight and strength to utilize extra horsepower.

Interchangeable, shoe type clutches The exclusive, self-adjusting Speed-o-Matic clutches are internal-expanding . . . easily accessible . . . all are interchangeable . . . clutch shells are alloy cast iron.

LINK-BELT SPEEDER LS-98

Get all the facts now on the great LS-98
. . . the industry's most advanced 1-yd machine

For complete details on how and why the LS-98 is your best answer to the problem of rising costs and shrinking profits, see your Link-Belt Speeder distributor. In many cases, he'll be able to give you an actual demonstration . . . let you prove for yourself why the LS-98 is great—truly the most advanced machine in the shovel-crane industry.

LINK-BELT SPEEDER CORPORATION
Cedar Rapids, Iowa

13,490

ASK FOR THE "INSIDE STORY"

See your distributor or write for the 98 Series catalog and the new booklet which gives you the "Inside Story" on Speed-o-Matic control.

BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

LINK-BELT SPEEDER

Bergen Wire Rope Company has been supplying wire rope to meet the most exacting requirements of the Army, Navy, Air Force and of industry for many years. Bergen's modern plant is fully equipped with the latest types of machinery for swaging, pressing, welding, tensile testing, proof testing, pre-stressing and laboratory developmental work.

for best

Wire Rope Economy

specify BERGEN

- Large stocks of standard rope constructions and sizes are maintained for immediate shipment.
- Quick deliveries can be made on short runs, special and unique constructions.
- Slings and assemblies of all types can be furnished with spliced, socketed or swaged fittings.

*Let **BERGEN** help you improve your wire rope economy.*

BERGEN

WIRE ROPE COMPANY 54 GREGG STREET, LODI, NEW JERSEY

Write for Bergen's "Guide to Selecting Wire Rope"

How to lower the cost of elevating

Let LINK-BELT recommend the bucket elevator that meets your requirements from 13 types in 4 basic designs

WANT to cut your cost of raising materials to processing machinery or to storage bins or silos? Regardless of the capacity required — or the characteristics of your material — there's a Link-Belt Bucket Elevator for the job.

Working with this broad line, Link-Belt engineers can select the one best-suited to your needs. A wide range of sizes on chains or belts is available.

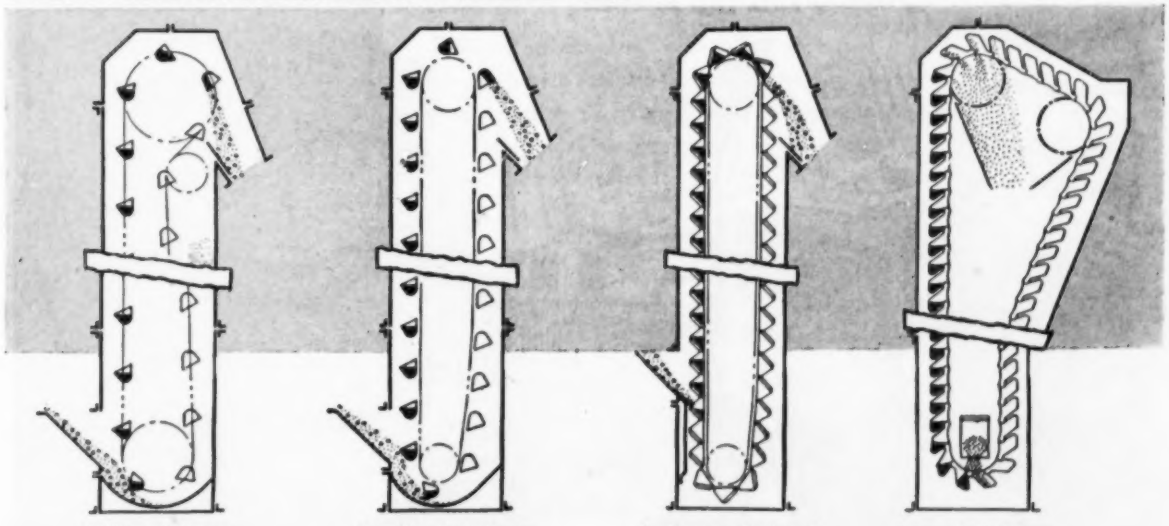
What's more, installation, maintenance and operating costs are low with Link-Belt Bucket Elevators. Rigid, jig-built casings are self-supporting, need only occasional lateral tie-ins depending on height. You have quick access to both head and boot for periodic inspections. Simple screw or gravity take-ups maintain chain or belt tension at all times.

There's an experienced materials handling engineer in the Link-Belt office near you. Call him for complete information.

LINK-BELT

BUCKET ELEVATORS

◀ Twin Link-Belt continuous discharge bucket elevators provide continuous flow of materials at this cement mill. Inclined elevators of this type are ideally suited for handling sand, gravel, stone and similar materials.



Positive discharge
for light, fluffy, fragile or materials that tend to stick to the buckets.

Centrifugal discharge
for free-flowing, fine or loose materials with small to medium lumps.

Continuous discharge
for range of materials —light to heavy, small to large, abrasive lumps.

Internal discharge
for gentle handling of small articles such as pellets, seeds, castings.

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices in Principal Cities. 13,286-A

NYLON in the U. S. Royal Con-Trak-Tor helps you through the heavy going—*keeps you on schedule!*

ALL-NYLON STRENGTH

The Con-Trak-Tor's Nylon cord body withstands murderous impact . . . means that you get every hour of tire life built into this great U. S. Royal tire.

TRIPLE IMPACT PROTECTION

The Con-Trak-Tor's built with extra rubber between cord-plies—double shock-pads beneath the tread—tough rock-resisting construction at the crown.

FULL LUG TRACTION

The Con-Trak-Tor's full-width lug design digs deeper, pulls harder in forward or reverse—actually works where other tires stall.

Prove it. Put the Nylon U. S. Royal Con-Trak-Tor to work—watch your pay loads stay on the move. Your U. S. Royal Dealer has it in your size, for your job.

NYLON...Keeps Pay Loads Moving!

U.S. ROYAL

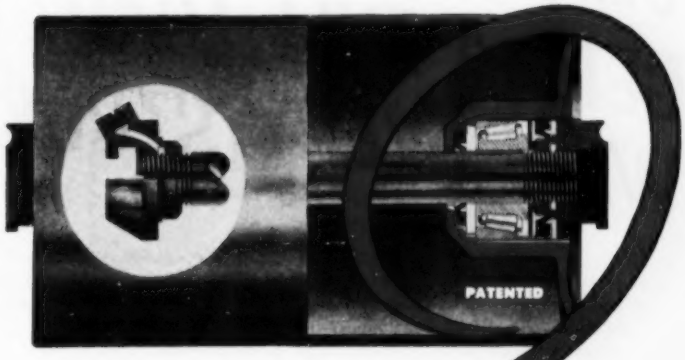
CON-TRAK-TOR
FULL LUG

US RUBBER UNITED STATES RUBBER COMPANY

UST* Continental Idlers

*** UNIT-SEALED PRE-LUBRICATED TIMKEN BEARINGS**

Saves Grease!
Saves Labor!
Saves Belts!



STANDARD DUTY IDLER

CGC UNIT-SEALED
CGC PRE-LUBRICATED
CGC TIMKEN BEARINGS

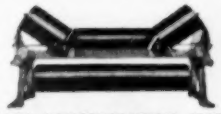
Continental's Unit-Sealed "UST" Conveyor Idlers, incorporating Timken Bearings, Garlock Klozures, are the answer to the operator's prayer.

The Unit Bearing Assemblies—"sealed unto themselves" provide an ample but not excessive grease reservoir. This represents a saving of grease and further eliminates any possible migration of the grease from upper to lower bearings on inclined rolls. The lubricant is a top quality water repellent grease of a stable consistency with a wide temperature range for long life.

Most important—this construction permits operating the Continental "UST" Idler without relubrication for 1-2-3 years depending upon the severity or character of conditions.

SELF-ALIGNING FLAT BELT IDLER

RUBBER DISC IMPACT IDLER



GRAIN CONCENTRATION IDLER

SELF-ALIGNING TROUGHING IDLER

For detailed information on these idlers write for Bulletin PQ-116

***Long Life*- THE ULTIMATE IN MINIMUM MAINTENANCE**

CG—5209

INDUSTRIAL DIVISION
CONTINENTAL GIN COMPANY
BIRMINGHAM, ALABAMA

ENGINEERS CGC ATLANTA • DALLAS • MEMPHIS • NEW YORK CGC MANUFACTURERS

Dempster-Diggster bucket GETS A FULL LOAD WITH EVERY STROKE!

The hydraulic crowd and hoist operation of the new Dempster-Diggster GRD-101 gives you big shovel advantages in front end loading and excavation work. As shown in the at-work photos at right, here's what happens: Dempster-Diggster moves into material with shovel lowered against front of frame. No wheel traction is used to get excavation power. The hydraulic crowd and hoist moves bucket out and up following contour of material—getting a full bucket with every stroke . . . reducing loading time and idle truck time, thus getting the job done faster!

When you put your Dempster-Diggster into operation, one of the first things you will find is that your entire operation must be geared to a faster pace. This means greater efficiency of equipment and manpower—more profit to you!

Write us asking for Folder No. 3116 giving you complete information on the features of the Dempster-Diggster, including TRUCK-SPEED MOBILITY TO AND FROM JOBS . . . AUTOMATIC BUCKET TRIP . . . MAXIMUM DUMPING AND DIGGING HEIGHT . . . MINIMUM TURNING RADIUS . . . THE SHOVEL WITH TORQUE CONVERTER . . . HYDRAULIC STEERING, etc. Manufactured by Dempster Brothers, Inc.

In photo below camera catches Dempster-Diggster ready to back off and move up to a truck for loading.

DEMPSTER DIGGSTER

DEMPSTER BROTHERS 254 N. KNOX, KNOXVILLE 17, TENNESSEE

"With this one detonator, we'll shoot every hole in the blast!"

"Remember, Primacord is an insensitive detonating fuse. It packs a terrific wallop! . . . detonates every cartridge in every hole. *But it must be detonated.* It can't be set off by sparks, friction or ordinary shock. Stray electrical currents don't affect it – *and a direct hit by lightning failed to detonate it!*

"These are big advantages, especially when you're working with heavy electrical equipment, or during the thunderstorm seasons. Because with Primacord detonating each load and connecting all holes you can plan your blast for one hole or a thousand, and handle them efficiently and safely.

"Then – and then only – tape your detonator snugly to the end of the trunk line, and fire with Safety Fuse or battery. Remember – *tape* it, because a good snug connection is just as important here as it is all along the line." P-18

Ask your explosives supplier or write for further facts to

THE ENSIGN-BICKFORD COMPANY
Simsbury, Connecticut
Also Safety Fuse since 1836

PRIMACORD® *detonating fuse*

PROVED and APPROVED

GREATER OUTPUT LOWER UPKEEP WITH NEW TORQUE CONVERTER DRIVE

New standards of tractor-shovel performance are being set by the famous 1½ yd. Model HM "PAYLOADER" because a NEW Torque Converter drive has been added to its many features. A year of extensive field-testing proves that this new development insures faster, lower-cost materials handling because output is increased up to 1/3 and maintenance is drastically reduced.

Combined with the 4-speed, full-reversing transmission, the Torque Converter provides an unlimited range of automatically selected speeds to meet the load and operating conditions. Parts breakage and maintenance are less because shock loads are absorbed.

TORQUE CONVERTER DRIVE

MORE EFFICIENCY — Engine operates at most efficient speeds — no laboring or stalling

LOWER MAINTENANCE — Oil cushion absorbs load shocks—protects vital parts

EASIER OPERATION — Eliminates much gear-shifting and "clutching"

GREATER OUTPUT — Machine operates at highest speed in relation to load

Prove to yourself that this pioneer four-wheel-drive tractor-shovel, with torque converter, is the finest tractor-shovel available. Ask your "PAYLOADER" Distributor for a demonstration, or write The Frank G. Hough Co., 750 Sunnyside Ave., Libertyville, Illinois.

YOU CAN'T COMPETE IF YOUR EQUIPMENT IS OBSOLETE

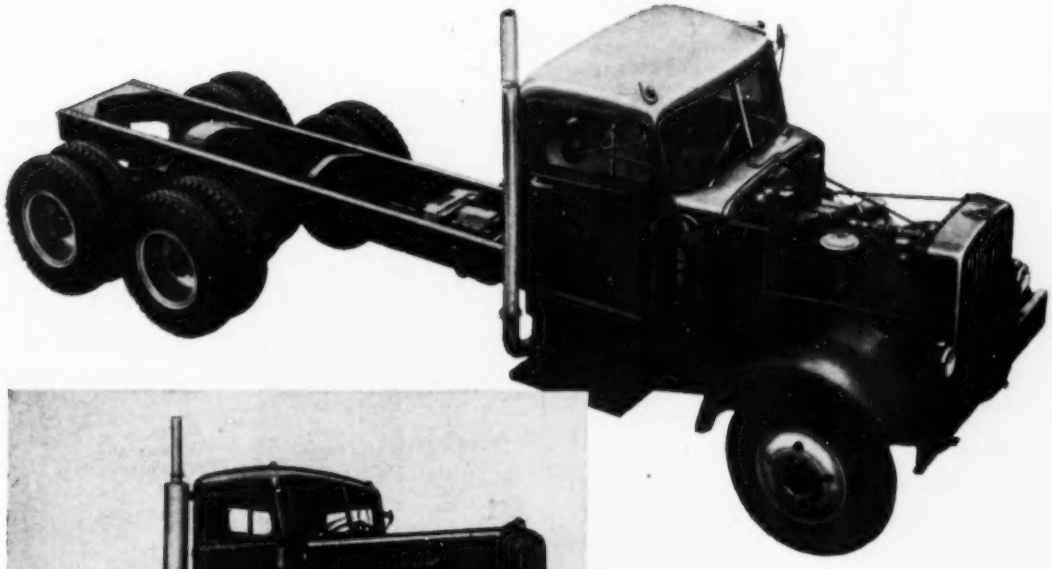
SAY "HUFF"

PAYLOADER®

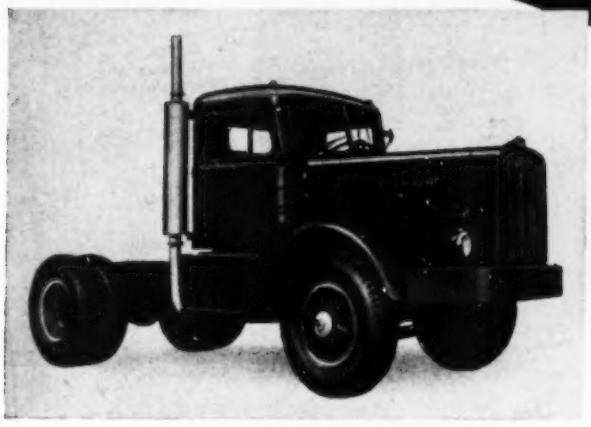
THE FRANK G. HOUGH CO. • Since 1920

Write for full details on the big 1½ yd. Model HM, or on any of the six smaller "PAYLOADERS" — 1⅛ yd., 1 yd., ¾ yd., ½ yd. or 12 cu. ft. sizes.

Here's why Autocar-Diesels outperform and outlast any other diesels on the market



▲ The Autocar-Diesel lightweight 6-wheeler chassis—geared and powered for your payloads.



◀ The Autocar-Diesel standard tractor—the finest piece of hauling equipment on the highway.

The reason is simple enough. The Autocar-Diesel is a *quality* truck—a *fully balanced* truck. The enormous power of the engine is balanced by the strength of the rear end. The frame, transmission, springs, etc., are selected for the strength of the complete vehicle and the job for which it is intended. This sort of custom-building and quality engineering result in trucks and tractors that outperform competitive units—they are dependable under the toughest conditions, they last for years and are amazingly inexpensive to maintain.

AUTOCAR TRUCKS

Autocar Division of The White Motor Company
Ardmore, Pa.

Autocar Trucks are sold and serviced throughout the world

Send for the new Autocar-Diesel folder, just off the press. It tells all about the standard Autocar-Diesel, and the new lightweight Autocar-Diesel with aluminum components.

Autocar Division of The White Motor Company
Ardmore, Pa.

Please send me the new Autocar-Diesel folder.

Name_____

Firm name_____

Address_____

No. of trucks in fleet_____

Type of operation_____

24E

Hardfacing

Check the **COMPLETE VICTOR LINE**

VICTOR hardfacing alloys save you time and money with faster application, smoother deposits, longer wear!

See your VICTOR dealer now . . . get the facts, and you'll get VICTOR!

VICTOR for welding

Profitable dealerships open; inquire now!

For Manual Application

THIS HARD-FACING ROD	FOR THESE CONDITIONS	FOR THIS EQUIPMENT	APPLI-CATION
VICTORTUBE	Severe abrasion	Scarifier teeth, dredge cutter blades, posthole augers, oil field tools, ditcher teeth	Acety. AC-DC Elec.
VICTORTUBE "SPECIAL"	Abrasion, severe impact	Oilfield bits, rock bits	Acety. only
VICTOR TUNGSMOOTH	Thin cutting edges	Coal cutters, brick augers, pug mill knives, screw conveyors, farm tools	Acety. AC-DC Elec.
VICTORITE	Earth abrasion or sliding friction	Plowshares, cultivators, steel mill guides, cement chutes, shaft bearings, rolling mill guides	Acety. AC-DC Elec.
TUBE VICTORITE	Abrasion, impact	Plow points and farm tools	Acety. AC-DC Elec.
VICTORITE 1	Corrosion, heat, abrasion	Saw teeth, carbon scrapers, wire guides, rocker arms, steel mill applications	Acety. AC-DC Elec.
VICTORITE 6	Red heat, impact, corrosion and abrasion	Blanking, forming and trimming dies, cams, hot punches, pump shafts	Acety. AC-DC Elec.
VICTORITE 12	Heat, abrasion, impact	Saw blade inserts and other critical applications	Acety. AC-DC Elec.
VICTORITE CARBON ARC	High abrasion, thin deposit	Plowshares, lister shares, sweeps	Carb. arc Acety.
VICTORALLOY	Abrasion, severe impact	Tractor rollers, dredge pump impellers, bucket lips and teeth, rock crushers, steel mill wobblers, roll crushers	Acety. AC-DC Elec.
VICTORALLOY #1	High abrasion, medium impact	Bucket lips, rock crushers, Muller tires, gyratories	Acety. AC-DC Elec.
VICTORALLOY "A"	Angular shock, extreme impact, build-up	Clutch parts, gears, crusher plates, gyratory mantles, build-up for hardfacing	AC-DC Elec. only
VICTORALLOY "B"	Heavy impact, moderate abrasion	Tractor rollers and sprockets, shovel pads, plates, idlers, etc.	AC-DC Elec. only
VICTORALLOY "C"	High abrasion, moderate shock and impact	Tractor grousers, pressure rolls, crusher segments, roll crusher teeth	AC-DC Elec. only

Also VICTOR Bulk Metals, VICTORITE Plow Point Bars, and VICTOR Super-Titan Blasting Nozzles

For Automatic Application

THIS TYPE	FOR THESE CONDITIONS	ON THIS KIND OF EQUIPMENT
VA #1	Abrasion, medium impact	Crusher rolls, crushers, gyratory crushers
VA #2	Abrasion, impact, Multi-pass application	Steel mill applications
VA #3	Abrasion, light impact	Mill guides, crushers, dredge bushings
VA #4	Multiple layer build-up	Tractor rails, crane wheels, general build-up
VA #5	Heavy impact, abrasion	Tractor rollers, idlers, mine car wheels, sheave wheels
VA #6	Medium abrasion, high impact	Crane wheels, drums, roll necks
VA #7	Abrasion, high impact	Build-up for hardfacing
VA #8	Abrasion, medium impact	Dozer bits, roll crushers, scraper blades
VT #60	Extreme abrasion	Tool joints, grader blades, scraper blades, augers

VICTOR EQUIPMENT COMPANY

ALLOY ROD AND METAL DIVISION
11440 So. Alameda St. • Los Angeles 59

(Also Mfrs. of welding & cutting equipment, blasting nozzles)
844 Folsom St., San Francisco 7 3821 Santa Fe Ave., Los Angeles 58

H-11

PEABODY gives you...

Double Barrel EXPERIENCE!

. . . to produce hot gases efficiently and to vent gases without product loss . . .

Peabody engineers have had years of experience solving problems of controlled pressure combustion and gas scrubbing, cleaning, cooling, and absorbing. The multiple impact of this specialized knowledge in two such separate *(but often closely related)* fields offers unusually successful and profitable product and process improvements.

OFFICES IN PRINCIPAL CITIES

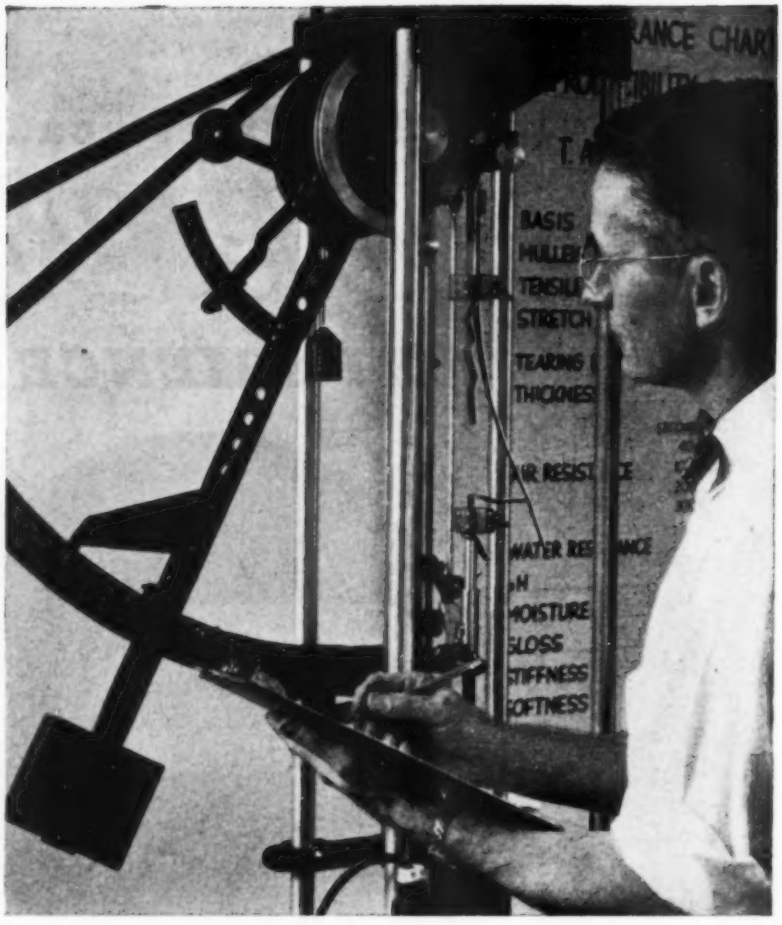
PEABODY
ENGINEERING CORPORATION
580 FIFTH AVENUE • NEW YORK 36, N. Y.
Manufacturers of all types of combustion equipment, direct-fired air heaters, gas scrubbers, coolers, and absorbers

PEABODY LIMITED • LONDON, S.W. 15, ENGLAND

561

No. 1 of a series

How Bemis makes GOOD multiwall bags for you



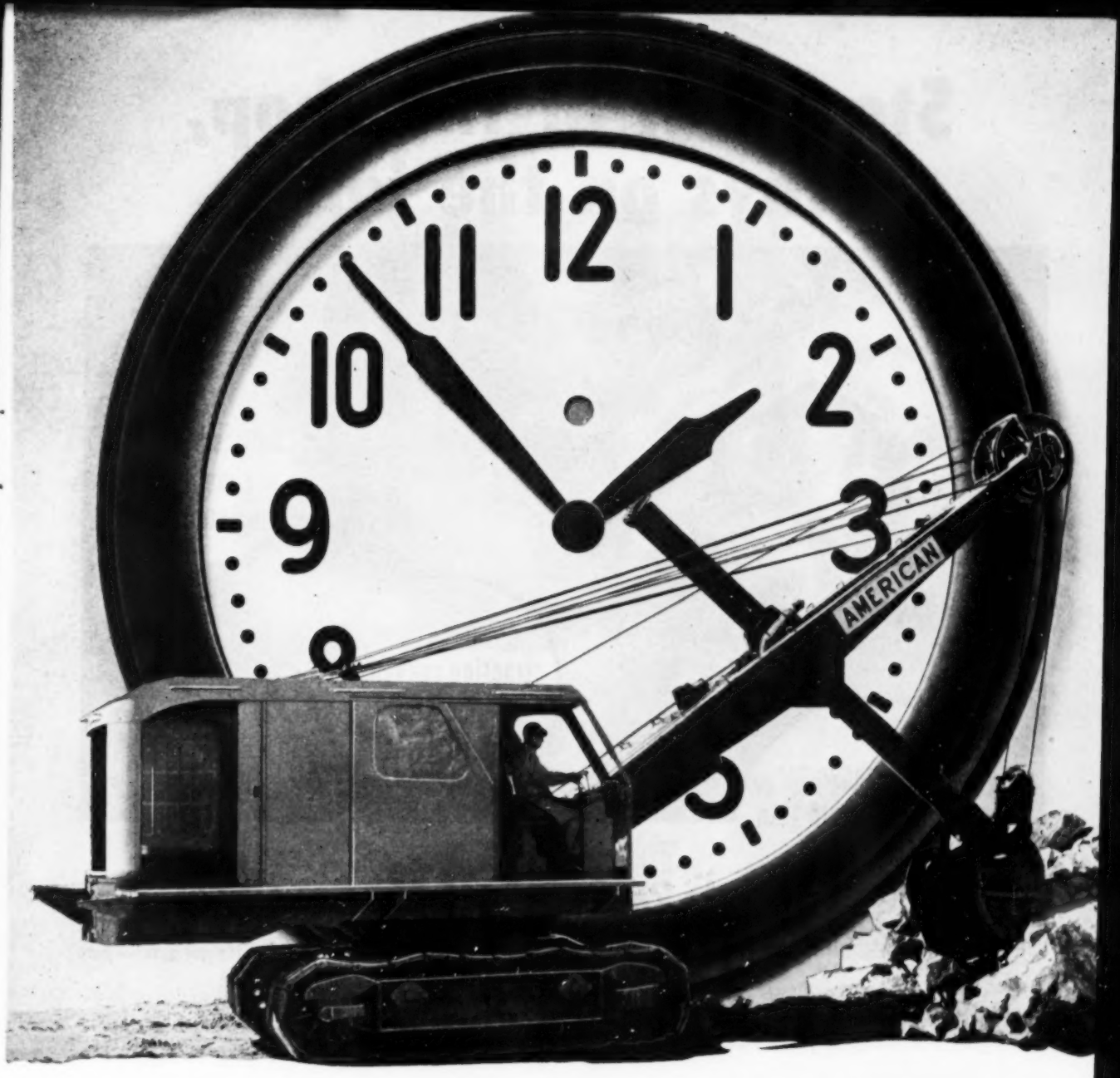
A. R. Ewing, director of the Bemis Paper Control Laboratory, has twenty-nine years' experience in this field. He is shown operating the laboratory's electro-hydraulic tensile tester, one of the many precision devices that make the Bemis laboratory probably the most complete in the country devoted to bag papers.

Use good paper . . . test it . . . prove it!

Bemis sets high standards for the various papers used in making Bemis Multiwall Bags. And we are able to maintain these standards because we buy our paper from a variety of top sources. These multiple sources are the key—if one should fall below par, the others are there to supply our needs. We don't have to take less than the best.

Bemis

General Offices—St. Louis 2, Missouri
Sales Offices in Principal Cities



more production per hour

with an American

Of course you're a clock-watcher. You have to be. And, that's why these time-saving American Machines are so important to you! American Cranes—Shovels—and Backhoes are engineered for *extra* capacity and faster, smoother operation. Maintenance is cut to a minimum. They add the extra production hours that mean extra profits to you!

Before you buy, get all the facts on the cost-cutting American Line—¾ yd. to 2 yd. capacities. Available as a crane, shovel, backhoe, clam, drag or magnet crane. Call or write your American distributor for full facts.

American Hoist

American Hoist & Derrick Co. St. Paul, Minnesota

Manufacturers of:

CRAWLER & TRUCK CRANES
STEEL DERRICKS
CROSBY BLOCKS
SHEAVES
LOCOMOTIVE CRANES
HOISTS
PORTABLE MATERIAL ELEVATORS
GENUINE CROSBY CLIPS
REVOLVER CRANES
UTILITY HOISTS

Stays out of the shop, stays on the job!

LE ROI TRANSO
Unitized design simplifies maintenance
4-wheel drive traction reduces engine strain and tire wear
Torque converter provides smooth flow of power... cushions shock

Le Roi-Transo TLF-150 Front-End Loader

YOUR first look at a Le Roi-Transo TLF-150 tells you it's got guts — guts aplenty! And Le Roi-Transo engineering is the reason.

Because of Le Roi-Transo engineering, your TLF-150 is seldom tied up in the shop. Because of Le Roi-Transo engineering, you load faster, travel faster, and dump faster — in sand, mud, snow, or rocky terrain.

Le Roi-Transo design assures you of less downtime these and other ways:

Engine, transmission, clutches, axle assembly, and torque converter are grouped compactly and are easy to get at. You save maintenance, time and labor. For example, it takes *less than an hour* to replace the spring-loaded clutch.

Patented "bucket-rocking action" helps you get a full bucket load within seconds, without tire-spin or undue strain on the loader.

Torque converter assures smooth flow of power to all four wheels — gives you sure-footed traction, reduces engine strain and tire wear.

It's design details like these that help Le Roi-Transo TLF-150 save important time and money for you.

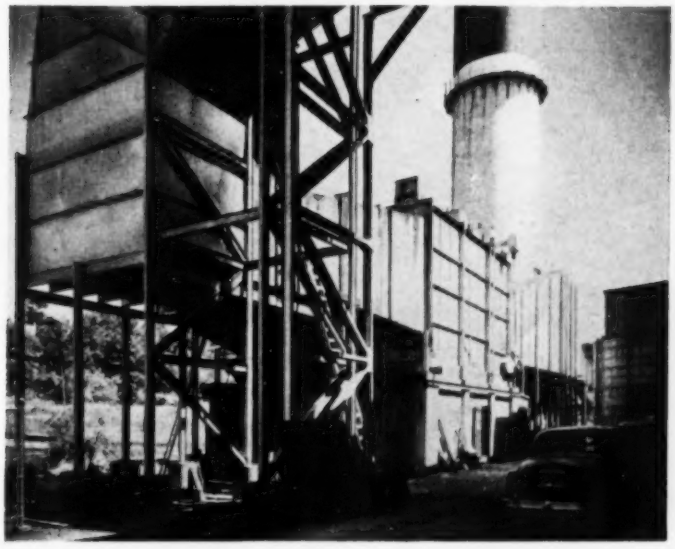
Have your Le Roi-Transo distributor arrange a demonstration, so you can see *all* the reasons why it pays to use a Le Roi-Transo TLF-150 on your material-handling jobs. TD-15

Note how compact arrangement of transmission, clutches, and torque converter puts transfer case conveniently at rear, so by merely removing the rear grill you can replace transmission clutch in less than 60 min.
TRANSO
LE ROI

LE ROI COMPANY

A Subsidiary of Westinghouse Air Brake Co.
TRANSO DIVISION
MILWAUKEE 14, WISCONSIN
Plants: Milwaukee • Cleveland — Greenwich — Dunkirk, Ohio • Coldwater, Mich.

From Pennsylvania *to Peru...*



Buell Electric Precipitators Set New Dust Collection Records!

Work with equal economy and efficiency on wide range of different and complex dust collection problems . . . from foundry dust and cement to minerals from smelting operations.

Drastically cut maintenance costs. Even better, there's less to maintain because of new, simpler design.

Set new efficiency standards far beyond currently accepted levels. The exclusive Buell Spiralectrode is typical of the advances that make this possible.

Work effectively in combination with other Buell equipment. Many such combinations now operating. The Electric Precipitator with one, two or three stage Buell Cyclones, for example.

● It's impossible to tell the whole story here. That takes your examination of the actual performance information now available. We're skeptics ourselves! That's why we want to meet the most skeptical engineer around . . . we believe we can send him away with a smile! Why settle for less than a good, long look? Write Buell Engineering Company, Dept. 18-E 70 Pine Street, New York 5, N. Y.

buell®

MECHANICAL ELECTRICAL *20 Years of Engineered Efficiency in* **DUST COLLECTION SYSTEMS**

We torture truck axles to

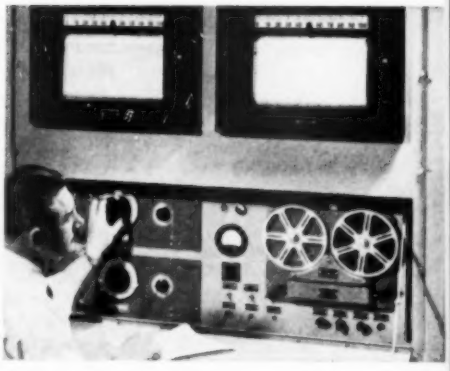
in the new Timken-Detroit indoor proving ground ...and only Timken has it!

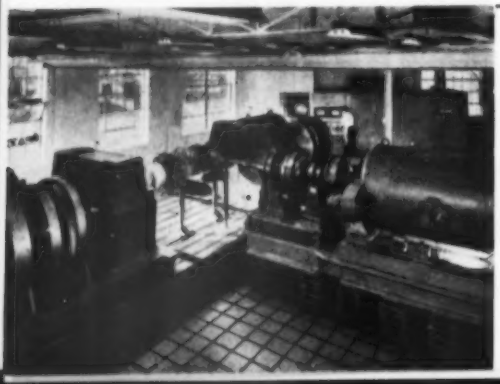
We shock-load, abuse, and torture them. Match every conceivable hauling condition. Then add a few brutal tricks of our own!

Why? So you'll know in advance, and *for sure*, that a Timken-Detroit axle can take the punishment it was designed for. More rugged, grueling punishment than any other trailer axle made!

To prove it, we capsuled a multi-thousand acre proving ground into one room. Here our engineers can put 50 years of experience in building axles for trucks, buses and trailers to work – subjecting axles and gearing *indoors*, to any *outdoor* operating condition.

Such exacting research pays off for you in: longer axle life; less maintenance, repairs and downtime; reduced operating expenses. This is why Timken-Detroit axles are preferred by manufacturers and operators everywhere.





How TDA proves axle quality in this "Torture Chamber"

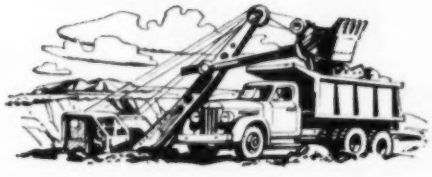
We pick one of our axles at random . . . then duplicate a hauling condition, hour after hour, day after day . . . simulating half a million miles of the toughest driving situations in just a few days. Or "invent" a test like going uphill with a full load from California to New York nonstop. There is no other axle testing like it in the world!

This is our "truck driver." He works in our "Torture Chamber." Above him are graphs showing speed and torque performance under any operating condition he chooses . . . soft ground at full load . . . mountains . . . express highways or side roads. With special dials, recorders and electronic devices, he actually *drives* the axle with scientific accuracy from his chair!

THREE TYPES: Hypoid-helical double-reduction, optional inter-axle differential. Worm drive, without inter-axle differential.

Hauling wet mix? You need Timken-Detroit axles—duplicates of axles that have been given the "works" in our indoor testing laboratory. Simulating the punishment the axle would get hitting a chuck hole with a capacity load every 4 seconds, 24 hours a day, month after month! And it's all done to save you money on maintenance and repairs—make you more money every load.

death



TIMKEN Detroit AXLES

TIMKEN-DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN

The Accepted DTA Standard
TRADE MARK REGISTERED

"TORTURE-TESTED"
to Save Money on the Job

WORLD'S LARGEST MANUFACTURERS OF AXLES FOR TRUCKS, BUSES AND TRAILERS

For six-wheeler operation . . . the TDA Tandem Drive Rear Axle Unit

Now—the *lightest weight* tandem drive rear axle unit for heavy-duty motor trucks! And with these features, developed, introduced and pioneered by TDA: (1) Available in 3 types of final drives and 3 capacities. (2) Top-mounted straight-line final drive eliminates propeller shaft angularity. (3) Optional inter-axle differential . . . spur gear design, cab-controlled power-lockout. (4) Torsion flow axle shafts . . . guaranteed for 100,000 miles or three years, whichever occurs first. (5) Hot forged steel axle housing . . . guaranteed for the life of the vehicle. (6) Unit-mounted "P" series power brakes . . . for longer life, greater economy and efficiency. (7) Cradle ride spring suspension and paralleled torque rod system . . . maintain correct alignment and weight distribution regardless of driving and braking conditions. (8) Exclusive two-piece trunnion tube bracket speeds servicing. (9) Removable torque rod and spring guide brackets . . . for positive alignment, easier replacement. (10) Rubber torque rod bushings and rubber spring seat bushings . . . eliminate metal-to-metal contact. Require no lubrication.

Increase axle life with Genuine TDA Equipment Parts

Take no chances with ordinary replacement parts. For sure, dependable factory-type jobs, look to genuine Timken-Detroit axle parts kits—identical to your axles' original equipment.

Each kit is *complete*—gives you everything you need—in one handy package. Gaskets and shim parts, brake liners, steering knuckles, differential gears—for every size of brake and axle. Order by number from your dealer. Cut labor and adjustment costs. Get trucks back on the road quicker!

Plant at: Detroit, Michigan • Oshkosh, Wisconsin • Utica, New York • Ashtabula, Kenton and Newark, Ohio • New Castle, Pennsylvania

Cedarapids

Built by IOWA

UNITIZED PLANT

with a HAMMERMILL SECONDARY

HERE'S the way to outproduce your competition, handle *any* aggregate producing job that comes along . . . and do it at the low production costs that mean a tidy profit on every job.

To meet specifications for any job with any quantity of finished product, the Unitized Plant's basic primary crushing, scalping, secondary crushing and bin units can be combined in dozens of different ways to produce any size products from aglime to rip rap, in volumes up to 250 tons per hour or more in quarry operations. And you get real economy in operating and maintenance costs.

There's a Cedarapids Unitized Plant combination designed to fit your needs. Call your Cedarapids distributor for all the reasons why Unitized Plants are your best bet for beating competition.

PRODUCES AGLIME AND THREE OTHER PRODUCTS IN ONE OPERATION!

The Cedarapids Unitized Plant shown above, utilizing a Portable 4033 Hammermill Secondary Plant, produced lime dust from 1/8" down and three other products of the same time . . . and at a rate of 210 tons per hour!

When your job calls for aglime or crushed limestone, or both in one operation, be sure to investigate all the advantages of Cedarapids Hammermills. They are available in 4033, 3033 and 2033 sizes, as individual units or in portable or stationary plants. Your Cedarapids distributor will gladly help you select the size best suited for your needs.

IOWA MANUFACTURING COMPANY Cedar Rapids, Iowa, U. S. A.

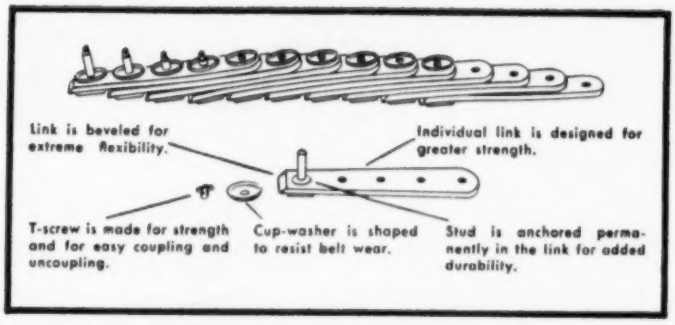
Master Bituminous Mixing Plant

Vibratory Soil Compactor

Motorized Head Pulley

Model G-60—6000-lb. Bituminous Mixing Plant

This detailed line drawing of the new Veelos TD and TE v-belt makes it easy to see how this new v-belt is designed to do a better job... easier!


Link is beveled for extreme flexibility.
Individual link is designed for greater strength.
T-screw is made for strength and for easy coupling and uncoupling.
Cup-washer is shaped to resist belt wear.
Stud is anchored permanently in the link for added durability.

New VEELOS

TD and TE Adjustable V-Belt for D and E drives

- ***easy* to couple and install**
- **does a *better* job for a *longer* time**

THE NEW VEELOS TD AND TE adjustable v-belt was developed *specifically* for D and E drives. It's not just an adaptation, it's an entirely new patented v-belt design!

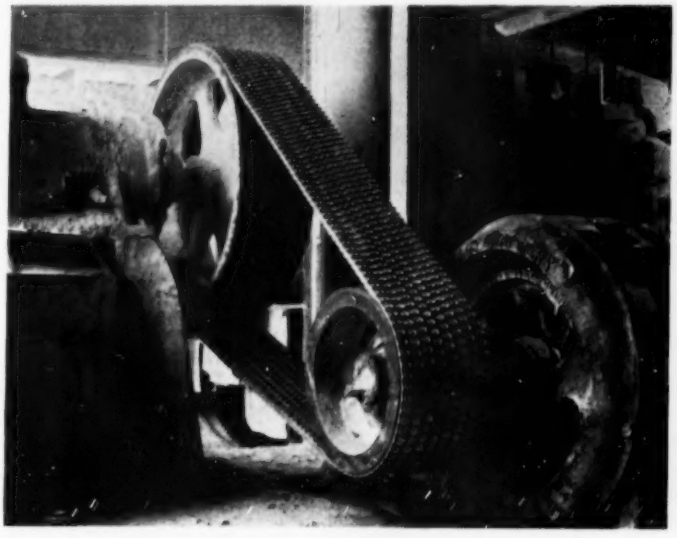
New Veelos TD and TE v-belt is faster and *easier* to install. Cup-washers and T-screws join links together to make up individual belts—and you don't need to remove outboard bearings.

New Veelos TD and TE v-belt lasts longer. Advanced construction of stud, cup-washer and T-screw provides added strength and durability—protects the new high-tensile strength link.

New Veelos TD and TE v-belt is perfectly balanced. Machine-cut sides and uniform links provide smooth, vibrationless, full-power delivery.

Put the new Veelos TD and TE v-belt on your D and E drives . . . prove to yourself that this v-belt does a better job for a longer time!

Get the complete story of this great, new v-belt. Send coupon for new 8-page illustrated bulletin.



MANHEIM MANUFACTURING & BELTING CO.
654 Manbel St., Manheim, Pa.

Please send copy of your new Veelos TD and TE v-belt catalog.

Name .....

Company .....

Address .....

.....

VEELOS
THE LINK
V-BELT

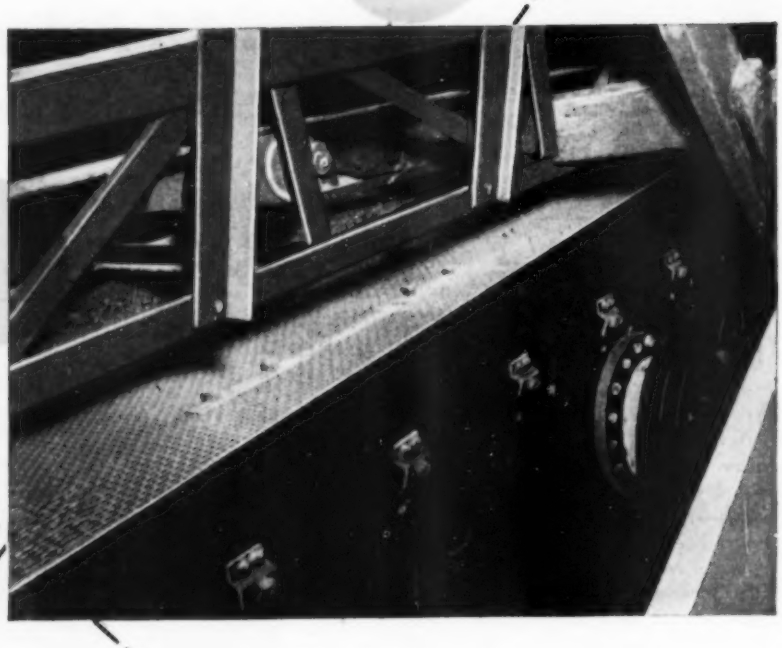
Veelos is known as Veelink outside the United States.

ADJUSTABLE TO ANY LENGTH

ADAPTABLE TO ANY DRIVE

bouncing rubber balls

help speed production of agricultural limestone at Krueger Quarry



On the Ball Tray Deck of this 4′ x 12′ Double Deck SIMPLICITY Screen at the Krueger Quarry in Winchester, Illinois, bouncing rubber balls team up with SIMPLICITY's unique gyrating action to produce agricultural limestone at the rate of 60 tons per hour. Production goes along without interruption because the lively rubber balls, bouncing in compartments on the lower deck, prevent build-up of the soft limestone and keep it from blinding the 5/32″ screen even when the material is damp.

SIMPLICITY Ball Tray Deck Screens like this one at the Krueger Quarry can do a better job of processing damp, sticky material for you. Other SIMPLICITY Screens with single, double or triple decks can help speed production and cut the costs of all your screening operations. For complete information, consult a SIMPLICITY sales engineer or write us today.

123

Sales representatives in all parts of the U.S.A.

FOR CANADA: Canadian Bridge Engineering Co., Ltd., Walkerville, Ontario

FOR EXPORT: Brown and Sites, 50 Church Street, New York 7, N. Y.

simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND, MICHIGAN

Pulls 20 cars loaded with limestone . . .

Operates with "Rock-bottom" Economy!

Works 144 hours a week...

When an industrial man boasts about how he handles a heavy hauling problem, just remember, he may be entirely justified—especially if he owns a PLYMOUTH! . . . These smooth switchers are fast, efficient, and easy to operate. Each model packs a whale of a lot of power and runs year after year with economy.

Near Batesville, Arkansas, at the quarry of the Batesville White Lime Company, where the above photos were taken, M. S. Stokes, Treasurer, reports, "Our 20-ton Plymouth operates eighteen 8-hour shifts a week over a 2.7 mile track. Grades go up to 3%, but we pull 20 loaded cars with ease. Operation is easy and economical; we use only a gallon of fuel an hour!"

Discover how much you would save by replacing tired old equipment with a new Plymouth. Models from 3 to 70 tons—standard and narrow gauge. Choice of gasoline and Diesel-mechanical, gasoline and Diesel-Torqomotive*, or Diesel-electric Drive. Address: PLYMOUTH LOCOMOTIVE WORKS, Dept. A-15, Plymouth, Ohio.

*Torqomotive Drive: Plymouth transmission with hydraulic torque-converter.

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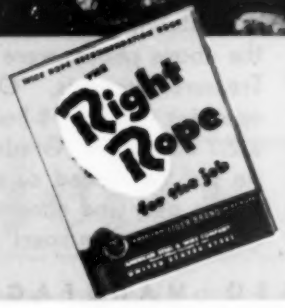

overburden moved with one Tiger Brand Hoist Rope

IMAGINE 12,587 50-ton freight cars strung out end-to-end. They would make a train more than 80 miles long; and if each car was level full, the entire train would contain 1,000,000 cubic yards of material. That's how much overburden this big coal stripping shovel moved with one American Tiger Brand Hoist Rope.

Despite hard digging, a 2⅜" Tiger Brand Wire Rope lifted and lowered the fully loaded 45 cu. yd. bucket *20,000* times before it had to be replaced. This equipment is used by Central Ohio Coal Company which supplies coal for The Ohio Power Company's new Muskingum River electric power generating plant. This company also uses Tiger Brand Wire Rope on its 18 cu. yd. shovels.

You will like Tiger Brand, too. It lasts long in *any* type of service.

Send the coupon for our recommendations of the right rope to use on your machines.

Regular lubrication of sheaves helps prevent excessive wear of the Tiger Brand Ropes on these big machines.

This 18 cu. yd. electric shovel and the 45 cu. yd. job shown on the opposite page are stripping overburden 3 shifts a day *every* day at Central Ohio Coal Co.'s big Muskingum Mine near Zanesville, Ohio. Tiger Brand Rope is giving excellent service on both these hard-working machines.

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3. *SUBMERGED-ARC PROCESS*
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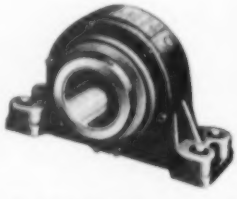

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5. *NEW HEAVY-DUTY TIMKEN ROLLER BEARINGS*
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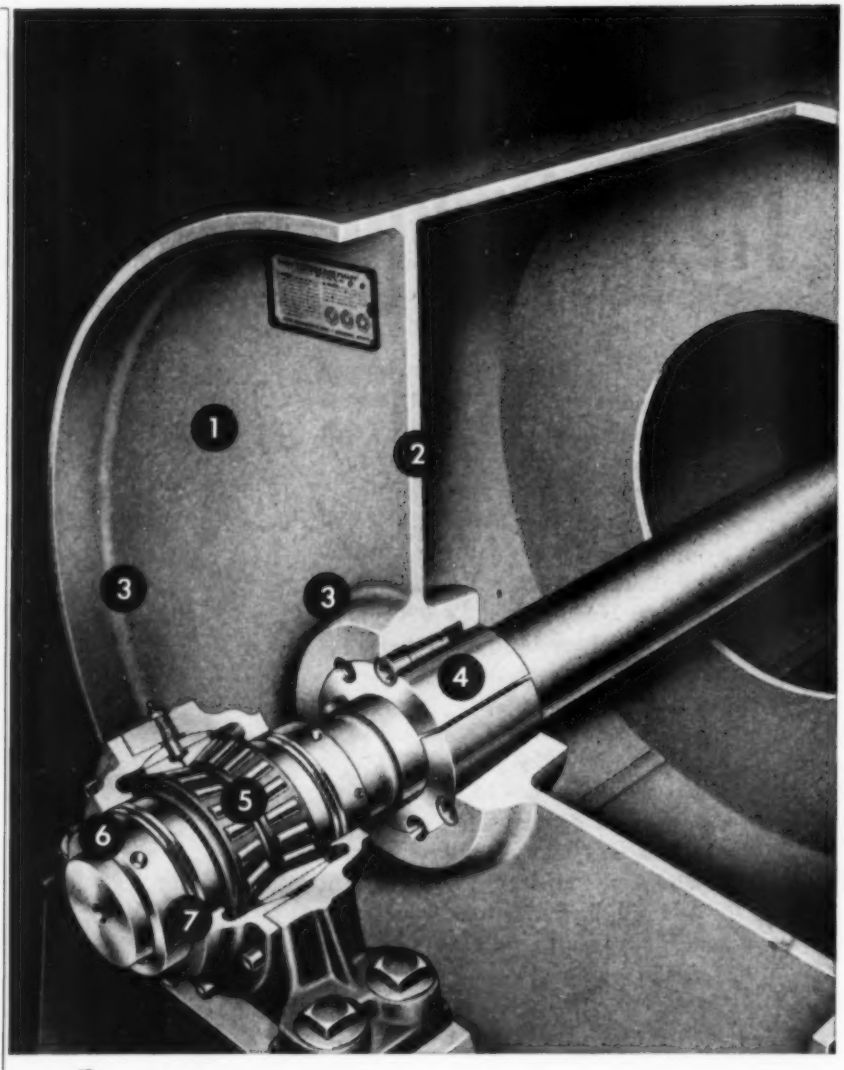
6. *HEAVY-DUTY ADAPTER MOUNTING*

7. *Sealed both on and off the shaft with DOUBLE PISTON RINGS.*



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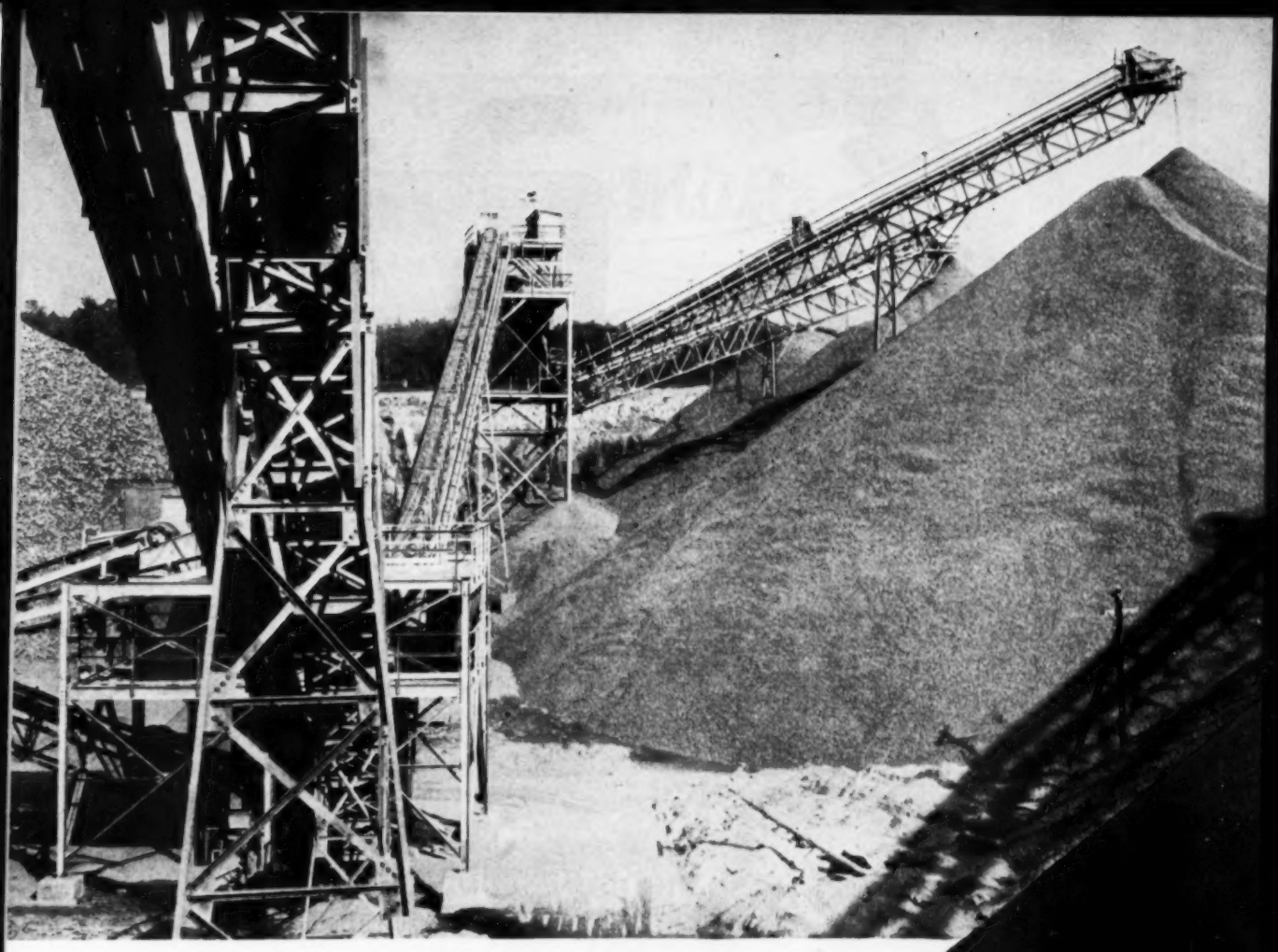

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VOL. 46 MAY 1954 No. 11

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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

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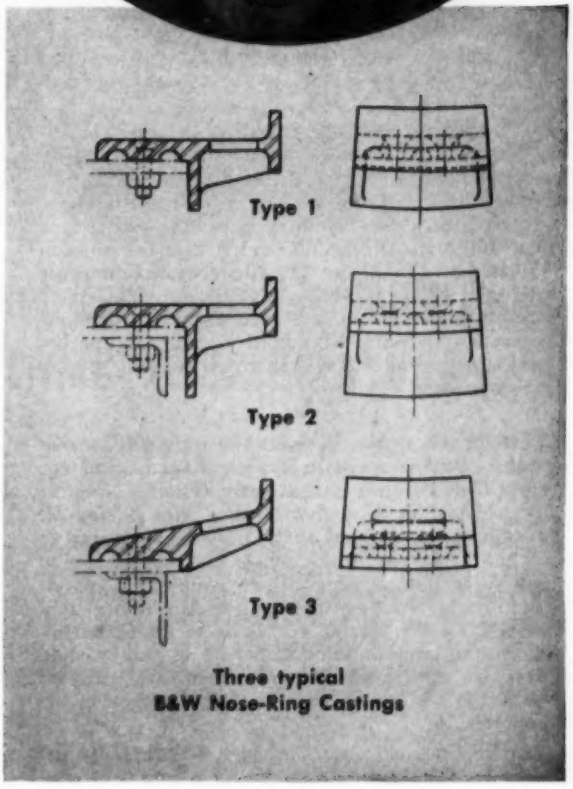


Three typical B&W Nose-Ring Castings

Write for Bulletin SDM-12.
The Babcock & Wilcox Company,
Process Equipment Dept.,
Barberton, Ohio.

BABCOCK & WILCOX

S-420

editorial

Censuses of Business and Manufactures

STOCKHOLDERS in any large business corporation would be shocked into action if they learned that its management was so careless and unbusinesslike that it kept no regular and complete records of all of its many departments and their functions. No business can long survive in this highly-competitive era without such information. Yet our government, the largest and most complex business organization the world has ever seen, and in which we are all stockholders, is doing that very thing. The law required that censuses of manufacturers, mineral industries, and distribution and service trades be taken in 1954 on 1953 data. However, because the necessary funds were not appropriated in the last session of Congress, the law was ignored last year, and it is now too late to take these censuses on the existing schedule.

We believe that the taking of these censuses at the earliest possible time is of utmost importance, and that it is also important that these and other presently authorized censuses be taken on schedule hereafter. A bill now before Congress, H.R. 8487, authorizes taking these censuses one year later than presently scheduled under law. It recognizes the fact that it is now too late to adhere to the original schedule and it calls for censuses in 1955 based on 1954 data. The Chamber of Commerce of the United States feels very strongly on this subject and recently had the executive secretary of its committee on business statistics, R. Buford Brandis, appear before a House committee in support of this bill, urging that it be approved.

ACCORDING to Mr. Brandis, the censuses involved in H.R. 8487 are a part of a carefully worked out program which business groups, including the National Chamber, helped develop shortly after World War II. At that time it was deemed of the utmost importance to business and to the nation as a whole that, after a period of eight years during which there were many major changes in the national economy, up-to-date information be obtained on the size of our business establishment, its location, composition, sales, employment, and payrolls. This was one of the many items of legislation rushed through in the last few days of the regular session of the 80th Congress.

Mr. Brandis pointed out, "Article I, Section 2, of the United States Constitution provides for a census of population every 10 years. Legislation over the years has authorized additional censuses, including censuses of agriculture and manufactures. Taking into account the then existing time schedules for the censuses of population and agriculture, the 80th and 81st Congresses established a carefully planned program designed to level out the workload of the Census Bureau over the decade. The 80th Congress in 1948 established a program calling for censuses of manufactures; retail, wholesale, and service trades; mineral industries; and transportation, every 5 years; and special interim statistical studies. The 81st Congress in 1949 and 1950 established a program for a census of housing every 10 years and a census of governments every 5 years.

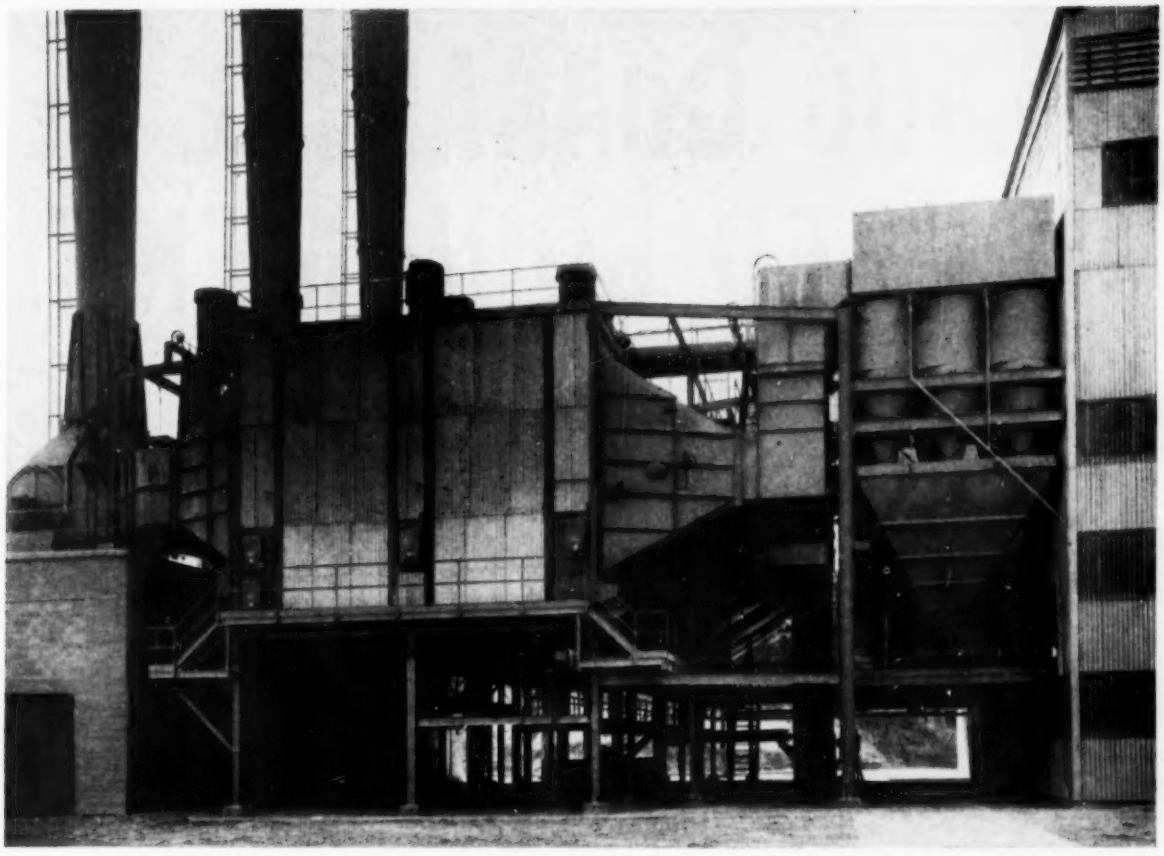
"This carefully worked out time schedule provides for an economical workload in the Census Bureau spread over the decade. Economic intelligence, using the word 'intelligence' in the military sense, was never more essential to the successful functioning of a competitive private enterprise economy than today. The soundness of government policy decisions, and private business planning as well, depends upon the availability of accurate and adequate statistical information.

"This government and this economy dare not operate blind. Not only are the regular censuses essential as direct sources of statistical information on our society and our economy, but the census data serve as indispensable benchmarks for the calculation of such key economic indicators as gross national product and national income. This is the result of the fact that much estimating is necessary in developing such indicators, and the estimates can be no better than the original data on which they are based. Prompt enactment of H.R. 8487 will enable the Census Bureau to get on with the job of preparing to take the censuses of manufactures, minerals, and business in 1955 on 1954 data."

PRESENT law makes provisions for a regular coordinated program of business surveys. Under the old laws the census of manufactures was taken every two years and the census of business (wholesale, retail, and service trades) and the mineral industries, every ten years. Under the present law all of these censuses, plus a new census of transportation, will be taken together every five years. This program has many advantages over the old. Manufacturers, including those making concrete products, ready-mixed concrete, bituminized aggregates, etc., are relieved of the burden of supplying detailed information every other year. Businesses and the mineral industries, including the nonmetallics, will have figures available every five years instead of ten, giving them a better check on trends and conditions. Everyone will gain through having all census figures available for the same years, instead of for different, non-comparable years.

The Secretary of Commerce last fall appointed a committee of experts under the chairmanship of Dr. Ralph Watkins of Dun and Bradstreet to review the census program. That committee's recommendations were based upon intensive and widespread consultation with business, labor, agriculture, and other groups. H.R. 8487 is in line with the recommendations of that committee. All businessmen have a stake in this matter and should advise their congressmen to see that this bill becomes law.

Walter E. Trauffer



Why Lone Star Cement Corp. again installs KOPPERS ELECTROSTATIC PRECIPITATORS

AFTER careful investigation, the Lone Star Cement Corporation installed Koppers Electrostatic Precipitators for two new cement kilns at its Roanoke, Virginia, mill. These two kilns began operation about two years ago.

Last year a third kiln was added to meet expanded demand. Careful investigations were again conducted (including performance records of the two Koppers Precipitators already in operation). Result of evaluations: Lone Star elected to install a third Koppers Electrostatic Precipitator.

Successful performance and completely satisfactory operation . . . these are two of the reasons why industry turns to Koppers Electrostatic Precipitators to solve flue gas cleaning problems. Perhaps Koppers can also help you. "Know-how" in precipitator design and fabrication (plus years of experience in closely related fields of study) ideally fits Koppers to offer you assistance. So, if you have a gas cleaning problem, call on Koppers . . . never any obligation, of course. Just fill out and mail the coupon below. (Or attach to your company letterhead.)

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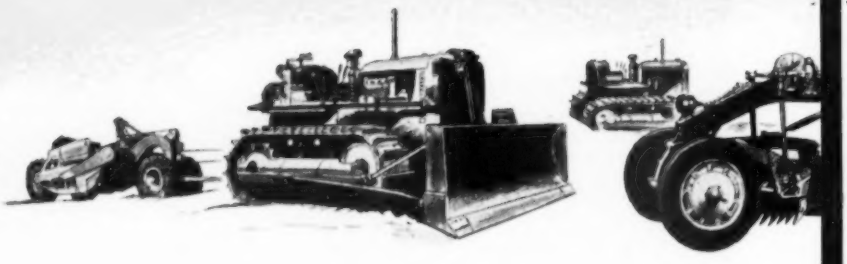

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news of the industry

Two Safety Records Set At Quarry Operation Of Kingston Trap Rock

William S. Bray, personnel and safety director of Kingston Trap Rock Company, has announced a new safety record for one of the firm's divisions, the Lambertville Quarry Company, which completed the entire year of 1953 without a lost-time accident and has just reached 200,000 hours without a lost-time accident. This record has accumulated since May 23, 1952.

The quarry is in a position to win awards from the National Safety Council, the U. S. Bureau of Mines, the State (New Jersey) Safety Council, and the Engineering award from the New Jersey Department of Labor and Industry.

The Lambertville safety committee consists of the following: William Pelle, safety chairman; Charles Cummings, plant superintendent; Rolfe Tjomstol, assistant plant superintendent; Pasquale Soriero, foreman; and Charles Opdyke, foreman.

These men make regular inspections and suggest ways of improving plant safety. All new employees are alerted to the dangers of their jobs by the foreman. Educational and visual aids such as posters, payroll stuffers, and 16mm. sound films are utilized in safety training.

In comparing the past and present records, the Lambertville plant has shown considerable improvement. In 1952 there was one lost-time accident; the frequency rating was 9.283 and the severity rating, 0.149. In 1953 there was no lost-time accident.

Kingston Trap Rock Company management is having a bronze plaque engraved to be presented later at a safety dinner. The Lambertville quarry staff has received a personal letter from Ned H. Dearborn, president of the National Safety Council, congratulating the plant on this perfect record.

● William Pelle, Kingston Trap Rock's safety chairman, displaying the plaque presented by the head office to the Lambertville Quarry for completing over 200,000 man-hours without a lost-time accident.

Coming Events

June 13-18, 1954 — Chicago. 57th annual meeting and exhibit, American Society for Testing Materials. Sherman and Morrison Hotels.

July 22-23, 1954—Hot Springs, Va. Directors' meeting, National Crushed Stone Association. The Homestead.

August 25-26, 1954 — Murray Bay, Quebec. Directors' meeting, National Sand and Gravel Association. Manoir Richelieu.

October 18-22, 1954 — Chicago. 42nd National Safety Congress and Exposition. Conrad Hilton Hotel.

Producer Wins Decision In Historic Court Case Involving County Plant

According to the Missouri Limestone Association's *News Letter*, March 27 was a momentous day in the limestone industry in Missouri. On that day the Circuit Court of Clinton County rendered a judgment as follows:

". . . That defendant Clinton County, its agent, the Clinton County Court, and its members are perpetually enjoined as follows: (a) from directly or indirectly operating a quarry, (b) from directly or indirectly manufacturing crushed rock and stone products, (c) from acquiring directly or indirectly machinery to be used for quarry purposes, (d) from any sale or disposition of crushed rock or stone products, (e) from budgeting or expending public moneys for any of the aforesaid purposes."

To date, *News Letter* points out, this pronouncement is a victory for the firm of Everett and Clark, Plattsburg, Mo. Mr. Clark was a partner of Mr. Everett at the time litigation in this case was initiated in 1953. In the meantime Mr. Clark died, and the partnership has been dissolved, although the case was continued as originally decided by the two partners. (The firm name is now Everett Quarries, Inc.)

The case and the court's decision establish for the first time in Missouri a court record to which producers and others may look for guidance in similar situations. According to a comment from N.A.L.I. headquarters, however, it should be borne in mind that the case "will probably be appealed to the Missouri Supreme Court".

Another proposed expansion of the Marquette Cement Mfg. Company's Cape Girardeau plant, the installation of another kiln, will increase output by 300,000 bbl. Cost of the kiln will be about $550,000.

March Contracts Show Highest Dodge Totals—Indicate Bright Future

Dodge Reports of contract awards in March for new construction in the months ahead smashed all records, according to F. W. Dodge Corporation, which issued the final details of the Dodge figures previously announced in a general way by the White House and by George Cline Smith, Dodge economist. The reports cover the 37 states east of the Rockies.

1. March contract awards reported were the highest for March in Dodge's 63-year history.

2. March rounded out the highest first quarter in Dodge history.

3. New highs were set for March and for the first quarter in each basic Dodge category: non-residential, residential, and public works and utilities.

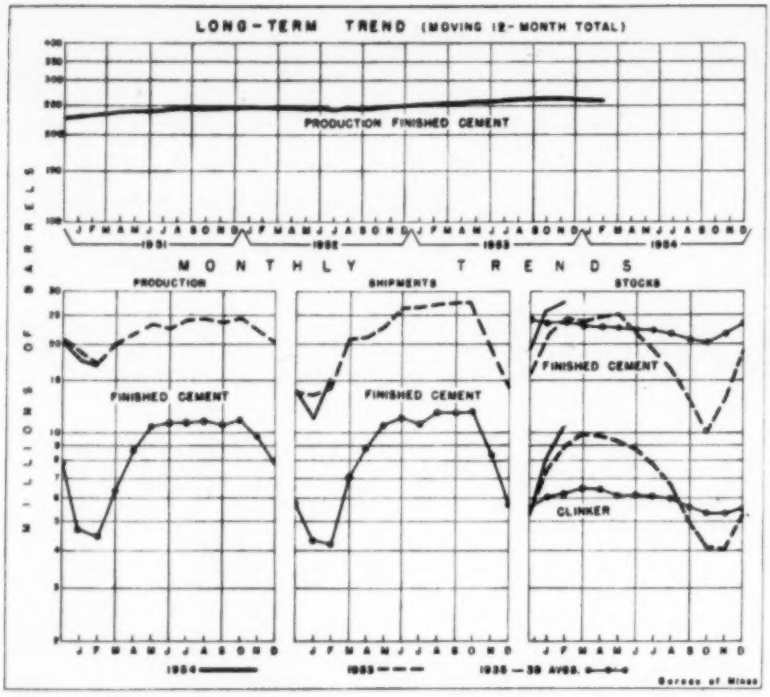
Also, March was the seventh month out of the last 12 to set new high records for the respective months.

Thomas S. Holden, Dodge vice-chairman, made the following statement: "It may now be said likewise that the record-breaking total of the Dodge figures for the first quarter of this year foreshadow some very bright and booming records of construction activity in the months ahead as the contracts reported are carried out and the construction is put in place."

Here are the basic totals and percentages for March:

The total of Dodge Reports was $1,527,517,000, up 25 percent over February and 13 percent over March, 1953, which was the highest previous March in Dodge history. Non-residential: $532, 060,000—up 14 percent over February and 18 percent over March, 1953. Residential: $667,737,000—up 31 percent over February and 10 percent over March, 1953. Public works and utilities: $327,720,000—up 34 percent over February and 12 percent over March, 1953.

The basic totals and percentages for the first quarter, 1954, were as follows: The total of Dodge Reports was $3,900,764,000—up 13 percent over the first quarter 1953, which was only a fraction of a percentage point behind 1951 as the top first quarter in Dodge history. Non-residential was $1,473,849,000—up 20 percent over the first quarter, 1953. Residential was $1,638,992,000—up 10 percent. Public works and utilities was $787,923,000, up 8 percent.



SUMMARY—Production of finished cement in February, 1954, as reported to the U. S. Bureau of Mines, totaled 16,895,000 barrels—2 percent less than in February, 1953. Mill shipments totaled 15,202,000 barrels—7 percent more than in February, 1953—while stocks of 27,562,000 barrels on hand at the end of the month were 13 percent higher than those on hand February 28, 1953. Clinker production during the month amounted to 18,910,000—virtually the same as in the month of February, 1953.

PRODUCTION—One hundred and fifty-six (156) plants located in 37 states and Puerto Rico reported a production of 16,895,000 barrels of finished cement during the month, compared to 155 plants which manufactured 17,325,000 barrels in February, 1953. Clinker production during the month was 18,910,000 barrels, compared to 18,917,000 barrels in February, 1953. Cumulative reports for the first two months of 1954 show that production and shipments declined 4 percent and 5 percent, respectively, from the first two months of 1953.

SHIPMENTS—Mill shipments of finished portland cement totaled 15,202,000 barrels, 7 percent more than in the same month of the previous year. Shipments were higher in 15 districts and lower in 5 districts, as compared to shipments in February, 1953. The largest percentage increases in shipments occurred in the western Missouri-Nebraska-Oklahoma-Arkansas, eastern Missouri-Minnesota-South Dakota, Texas, and Iowa districts, while the major declines were noted in the northern California, Oregon-Washington, Puerto Rico, and western Pennsylvania-West Virginia districts.

STOCKS—Mill stocks of 27,562,000 barrels of finished portland cement were on hand on February 28, 1954—13 percent more than at the end of February, 1953—while stocks of clinker totaled 10,080,000 barrels—also 13 percent higher than on the same date a year ago.

Brewer Retires from P.C.A.—Schneider Named Successor

The retirement of Rodney D. Brewer, manager of the Publications Bureau of the Portland Cement Association, Chicago, has been announced, effective April 1, by Carl D. Franks, president. Mr. Brewer, who served the association for 38 years, will be succeeded by Jack L. Schneider, assistant manager of the Publications Bureau.

Mr. Brewer joined P.C.A. in 1916, the year in which it was organized. Previously he had been with the Universal Atlas Cement Company for five years. He served for 20 years as office manager of the association's general office in Chicago before being promoted to the position he held at the time of his retirement.

Mr. Schneider, a journalism graduate of the University of Illinois, joined the association in 1948 as a writer in the Advertising and Publications Bureau and was made assistant manager of this bureau on January 1, 1954. He will continue to discharge the duties of assistant secretary of P.C.A., a post to which he was elected by the board of directors in 1952.

LARRY A. HUME, assistant to the president of the Peerless Cement Corporation, was elected president of the Builders and Traders Exchange of Detroit at a recent board meeting.

● Eldridge Wiseman, weighmaster at the Memphis gravel plant of the Marquette Cement Mfg. Co., and Champion Sonnenstrahl's Lohn, his prizewinning German Shepherd. Mr. and Mrs. Wiseman have trained Lohn so well that he won "best of breed" and "best of winners" honors, and later the "best of the show" title at the American Kennel Show.

2 Sayre & Fisher Sand Plants Operated by New Division

Construction and operation of two sand plants has been formally announced by John H. Junker, president of the Sayre & Fisher Brick Company, Sayreville, N. J. This firm, which for over a century has been engaged in the clay products industry, now has moved into the sand business through the newly-formed Sayre & Fisher Sand Company Division.

Operating on large company holdings at Sayreville, the new division's plants are located in a heavily industrialized and populous area. Truck and rail facilities are available, as well as loading docks for water shipping.

Market reception of the sand produced up to the present have been so favorable that plans for expansion have been entertained. It is indicated that one plant is producing quality concrete, mason, and foundry sands, while the second turns out high-purity industrial silica sands.

Heading the sand company is Donald Shippee, general manager. Purchasing is handled through Henry C. Cooper, purchasing agent.

1952 Sales and Value of Lime Dip 2% from 1951 Totals

Sales of open-market lime decreased 2 percent in quantity and value from 1951 to 1952, according to reports of producers to the U. S. Bureau of Mines. A major gain in volume of output was in agricultural lime, sales of which increased 14 percent. Chemical and industrial lime and lime sold to the building trades each declined 3 percent. Sales of dead-burned dolomite declined 2 percent. Chemical, industrial, and refractory lime combined accounted for 80 percent of total sales, compared with 81 percent in 1951. Building lime was 15 percent of the total, and agricultural 5 percent.

The number of active plants increased from 155 to 160. A total of 8,073,078 short tons was sold, valued at $95,231,221.

According to the annual report of the Ruberoid Company, producers of asbestos and asbestos products, this firm recorded net sales of $74,483,553 for the year ended December 31, 1953. This is the highest total of sales in the company's 67-year history. In 1952 sales stood at $66,058,400. Net earnings after taxes amounted to $4,576,073 last year, compared with $4,045,677 in 1952.

Cover Picture....

● The cover illustration this month shows the overall operation of the Mitchell Crushed Stone Company, an affiliate of Ralph Rogers & Company, which is located 5 miles west of Mitchell, Ind. (See page 90.) The quarry, developed in a high-calcium limestone formation, is strategically located with respect to a regional agstone market. Established in 1952, the modern stone plant operates at nearly 350 t.p.h., producing a wide range of specification aggregates and agstone. Note the powder man (foreground) loading the primary blast holes; the 2-cu. yd. shovel is loading an 18-ton diesel truck.

Whitehall Cement Mfg. Co. Speeds Installation Work In Reconstruction Project

During 1954 the management of the Whitehall Cement Manufacturing Company, Philadelphia, Pa., proposes to accelerate its reconstruction projects, which upon completion are to "result in practically a new plant".

Among the outstanding features of the work now under way is an entirely new layout for handling raw materials during the first stages of production. A primary crusher is to be installed on the floor of the quarry, to receive the cement rock delivered by trucks. The crushed rock will then be conveyed to the secondary crusher and screens, and the screened product will be conveyed to new concrete silos. Proportioning of the material from these silos, which will also contain limestone, iron ore, and sand, will be automatic.

An unloading station will be erected to handle incoming materials —coal, limestone, iron ore, sand, and eventually gypsum. All these materials except coal will be conveyed to the new silos by belt conveyor. Unit coal mills will be installed for the kilns for pulverizing, drying, and feeding the fuel.

Electrical facilities will be completely rebuilt. This project will involve the following: a change to higher voltage; new switch gear, lines, and motors; and a transformer station to permit purchase of some outside power in order to meet the needs of increased production and modern cement specifications.

Concrete silos for storing finished cement will also be provided to replace two warehouses. These structures will probably be completed in 1955. It is estimated that the 1954 program will cost approximately $2,400,000.

The Canada Cement Company plant in Port Colborne, Ont., has passed another milestone in accident prevention, joining the 1,000-Day Club of the portland cement industry. There has been no lost-time accident at the plant since May 15, 1951. The plant has won the Portland Cement award for an accident-free calendar year ten times.

Production of diatomite in the United States declined to 232,800 metric tons during 1952 because of a strike at one of the large operations. Normal output was resumed before the end of the year. California leads the states in the production of diatomite, followed in order by Nevada, Oregon, and Washington.

Those at the "head" table at the Kentucky Crushed Stone Association's banquet in Louisville were (left to right): James B. Allen, The Allen Company, Winchester, newly elected president; Joe E. Gray, field engineer, National Crushed Stone Association, Washington, D. C.; Dwight H. Bray, state highway engineer, Department of Highways, Frankfort, Ky.; W. O. Snyder, executive secretary, Kentucky Crushed Stone Association; Harper Gatton, executive vice-president, Kentucky Chamber of Commerce, Louisville, Ky., toastmaster; Wayne King, vice-president, W. S. Tyler Co., Baltimore, Md.; Mack Galbreath, district engineer, Bureau of Public Roads, Frankfort, Ky.; Samuel Omasta, assistant executive secretary, National Agricultural Limestone Institute, Washington, D. C.; and David Bassett, Bassett Products Co., Monticello, Ky., retiring president.

James B. Allen Elected President of Association By Kentucky Producers

James B. Allen, The Allen Company, Winchester, Ky., was named president of the Kentucky Crushed Stone Association at the eleventh annual meeting of that organization, held March 20, at the Seelbach Hotel in Louisville. Other officers elected at the meeting include the following: J. Robert Thompson, Frankfort, vice-president; Robert S. Waters, Elizabethtown, secretary; and Margaret McD. Smith, Lexington, treasurer. W. O. Snyder, Frankfort, was re-elected executive secretary.

Directors named at the annual business session were Emil Berry, Herbert Wells, Herman Genet, Marlon King, George Geoghegan, R. E. DeZonia. David Bassett, retiring president, automatically became an ex-officio member of the board.

Election of the officers and directors was followed by a social hour and the annual banquet.

During the general afternoon session, Wayne King, eastern manager for the W. S. Tyler Company, discussed types of screening and methods used in crushed stone production, stressing the techniques needed to meet the new specifications adopted by the Kentucky Department of Highways. After discussing screen types in general, he expressed the opinion that the new Kentucky specifications would force operators furnishing stone for highway operations to install additional equipment. He declared it would cost more money to produce new sizes, because it could mean taking crusher products apart and then putting portions of them back together again. Using blackboard diagrams, Mr. King also discussed production problems, particularly those involved in screening.

Samuel Omasta, assistant executive secretary of the National Agricultural Limestone Institute, briefly presented work done by his organization in the field of depletion allowances for tax purposes and explained some phases of the existing law and of laws that had been proposed in Congress along this line and in the use of agricultural limestone in the Federal farm program.

Joe Gray, field engineer for the National Crushed Stone Association, described the activities of the national organization in Washington and spoke briefly on specifications for waterbound macadam.

Wilson P. Foss III Elected President of N.Y. Trap Rock

Wilson P. Foss III, president of the New York Trap Rock Corporation, was recently elected president of the New York State Crushed Stone Association. Mr. Foss was a member of the association's board of directors from 1948-1953, and a vice-president since 1953. He is also a director of the National Crushed Stone Association and a member of its executive committee.

Wilson P. Foss III

The late Wilson P. Foss, Mr. Foss's grandfather, founded New York Trap Rock in 1919. His father, Wilson P. Foss Jr., is chairman of the board.

After his graduation from Yale University in 1937, Mr. Foss joined Trap Rock as a sales engineer and served in that capacity until he entered the U. S. Navy in 1942. Upon his release from active duty in 1946, Mr. Foss returned to New York Trap Rock as vice-president in charge of operations. He was named president in January, 1948.

New Freeport Sulphur Plant Attains High Production Goal

A planned production goal of 50,000 tons of sulphur a year was attained by the Garden Island Bay Mine in Louisiana in less than three months after initial operation, according to Edmund D. Wingfield, vice-president and general manager of Freeport Sulphur Company, which opened the mine on the toe of the Mississippi delta last November. It is the largest of four new salt dome projects in Freeport's $25,000,000 expansion program of long-range exploration and development activities.

The salt dome was discovered by Texas Company in exploring for oil. Subsequent drilling by Freeport disclosed a large deposit of sulphur 1,750 to 1,850 feet below the surface. Completion of the engineering and construction of the mining plant took two years and cost $14,000,000 because the desolate marshland area had to be built up before construction could begin.

Two Natl. Slag Ltd. Plants Now Under Construction At Site in Ontario, Canada

A two-plant operation in Ontario, Canada, is being constructed by National Slag Limited, a Canadian firm organized recently with Harris N. Snyder as president. Associated with Mr. Snyder, who is vice-president and general manager of the Buffalo Slag Company, Inc., Buffalo, N. Y., are the following: G. G. Robinson, Standard Paving & Materials, Toronto, vice-president; and Don Steel, Canada Crushed & Cut Stone Company, Hamilton, acting secretary and acting treasurer. Directors of the new company, in addition to Mr. Robinson and Mr. Snyder, are the latter's brother, G. S. Snyder, James Mogan, Ross Harstone, and Don Henderson. Richard Margesson is sales manager.

According to Mr. Snyder, the plants are being built on Windemere Cutoff, Hamilton, on a 45-acre site. One of the operations will be for the preparation of expanded-slag aggregate, and the second for air-cooled (hard slag) aggregate. The lightweight aggregate plant is reportedly well under way; and it is expected that operations will begin there early in June. Opening of the second plant is scheduled for this autumn.

E. Africa's First Cement Plant Supplies Dam Construction

One of the major problems facing the builders of the Jinja Dam at Owen Falls in Africa was the difficulty of obtaining cement. Local raw materials were unsuitable, and importing cement was too expensive.

The Building Research Station of the British Department of Scientific and Industrial Research recommended the building of a local cement plant. Facilities were established at Tororo, Uganda, 80 miles from the dam, and the first cement was produced there in March, 1953. The first consignment, normal portland cement which met the British Standard Specification No. 12, was received from the Uganda Cement Industry the following month.

Subsequently the plant began producing low-heat cement, which proved to be the most suitable for the large mass pours at the dam. By the end of 1953 approximately 9,000 tons of this type of cement had been used in the concrete construction. The plant, first of its kind in East Africa, is considered one of the most important advances in the industrialization of the country. Annual output is rated at 60,000 tons.

Jinja Dam will span the White Nile about 2 miles below Ripon Falls, the source of the 3,850-mile river; it will make Lake Victoria the largest reservoir in the world, according to Britsh Information Services.

According to present plans, Queen Elizabeth is to open the Owen Falls (Jinja) Dam in ceremonies at the site on April 29.

● "Men at work" on the preliminary modeling of the diorama which will be a part of New York Trap Rock's "Riverama". The water-borne exhibit will make Hudson River towns.

Unique Riverama to Feature Hudson River Valley's History

"Riverama"—a unique, educational floating display—is being prepared by the New York Trap Rock Corporation for exhibit in Hudson River communities beginning in May.

The exhibit, housed in one of Trap Rock's barges, which has been rebuilt for the purpose, will delineate the history of the lower Hudson River Valley, its communities, and industry. Opening of the exhibit will take place simultaneously with ceremonies dedicating the corporation's new $1,000,000 Haverstraw facilities on May 10.

Wilson P. Foss III, president of New York Trap Rock, in announcing the advent of the display, stated that the improvements at Haverstraw and the $1,500,00 barge-building program which has been launched by the company were undertaken to meet the expanding demands of construction programs in the area served by the firm.

In addition to a diorama, which will show by means of moving models the importance of adequate highway, road, and street systems, there will be a detailed geological map of the lower Hudson River Valley, and a historical map as well.

K.C. Sand Plant Workers Return After 10-Day Strike

Under the terms of a new contract signed by eight Greater Kansas City (Mo.) sand producing companies and members of A.F.L. hoisting engineers the following terms will be in force: a 5-cents-an-hour increase for the first year; another 5-cent increase the second year; a 44-hour work week (including 4 hours overtime) for December, January, and February; and a 48-hour week the remaining months of the year(including 8 hours overtime).

The new agreement, signed on March 11, ended a strike which began on March 1. According to H. A. Griffiths, commissioner for the Federal Mediation and Conciliation Service, the contract will run for two years.

Mexican Cement Industry Shows Increasing Output

Cement production in Mexico during 1953 amounted to approximately 57 percent of the planned capacity of 2,947,500 metric tons expected to be achieved when proposed expansions of 6 of the 18 plants now in operation have been completed.

In keeping with the trend during the last decade, cement production in Mexico increased nearly threefold from 560,000 metric tons in 1942 to 1,671,567 tons in 1952. Since 1948 less than 5,000 metric tons have been imported annually.

Arrangements have been completed by the Continental Sulphur and Phosphate Corporation of Dallas, Tex., to build an initial 50-ton capacity plant in Thermopolis, Wyo., according to R. D. Hughes, president. Continental was licensed by the American Sulphur and Refining Company of Los Angeles, to use a newly discovered sulphur extraction process which will produce 99.6 plus, refined powdered sulphur.

K. K. Kagarise to Head Committee of Operators Formed by Slag Assn.

On March 4 at the Mayflower Hotel in Washington, D.C., 28 members of the National Slag Association formed the Operators' Committee of that organization. The decision to organize came after a preliminary discussion led C. W. Ireland (president, Birmingham Slag Company). Named to head the permanent committee were the following: chairman, K. K. Kagarise (Standard Slag Company); secretary, E. W. Bauman (National Slag Assn.); program and advisory committee, James Carnathan (Birmingham Slag Co.), E. C. Levy Jr. (Edward C. Levy Company), C. H. Mitz (Duquesne Slag Products Co.), Wilson McDermut (Illinois Slag & Ballast Co.), and Frank Thomas (Bethlehem Steel Co.). These men will serve in their respective capacities for one year.

On the following day Chairman Kagarise presided at the first regular meeting, which was devoted to a discussion on operational problems of the slag industry. It was decided to request the National Slag Association to serve as a clearing house for listing all surplus equipment and supplies available to members, who are to forward all such items (with prices) to N.S.A. It was stressed that the association will not be responsible for the condition of the equipment offered nor for the consummation of any trading deals. The list is to be circulated periodically.

Although no definite action was taken on the date and place of the next meeting, it was suggested that plant inspection tours would be good drawing cards. Cincinnati was mentioned, since a new expanding operation was installed there recently by the American Materials Corporation.

Net sales of the Whitehall Cement Manufacturing Company, Philadelphia, Pa., in 1953 rose to $5,193,928 from $4,794,145 in 1952. Net income paralleled this trend; the 1953 figure was $615,067, against $590,000 in 1952.

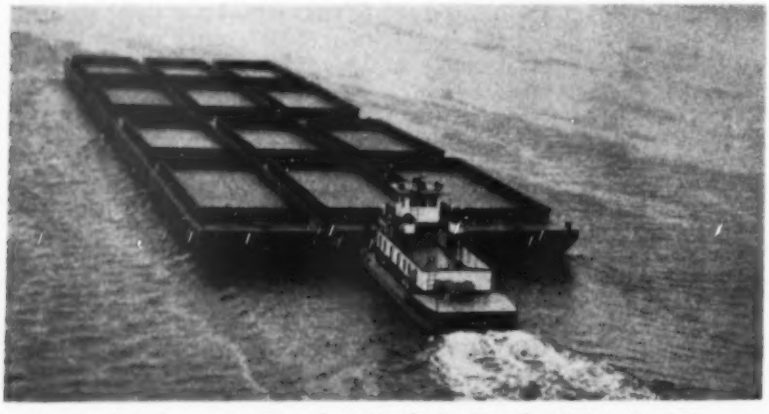
Since the Nash Dome mine of the Freeport Sulphur Company, recently opened in Fort Bend County, Tex., is on property willed to the Kentucky Female Orphan School at Midway, Ky., Freeport will pay a royalty to the school on every ton of sulphur it mines—possibly 70,000 tons annually.

Towboat, Barges to Carry Aggregates to Shiely Plant

Purchase of a $500,000 barge and towboat assembly for transporting sand and gravel on the Mississippi and Minnesota Rivers was announced recently by Joseph L. Shiely, president of the J. L. Shiely Company of St. Paul. The *Joealjim* (for the Shiely brothers—Joe, Al, and Jim), a 600-hp. towboat, was delivered at the St. Paul barge terminal by its builders, the St. Louis Shipbuilding and Steel Company.

According to Mr. Shiely, the towboat and 12 barges represent a part of a $2,000,000 aggregate and ready-mixed concrete expansion project. The Shiely company is the first of its kind in the St. Paul area, he said, to use barges. Formerly transportation was by rail and truck.

Present plans indicate that aggregate will be brought in by barge from the company's 1,800-acre site on Grey Cloud Island in the Mississippi River. Mr. Shiely also announced that docks will be constructed on the upper Mississippi and Minnesota Rivers.



● An even dozen barges and the towboat "Joealjim", plying the Mississippi and Minnesota Rivers, comprise only one part of the J. L. Shiely Company's $2,000,000 expansion program.

More Information Issued On Petroleum Distillate In Cement Manufacturing

J. C. Witt, consulting engineer of Chicago, whose patented process for the manufacture of cement using petroleum distillate instead of water was described in the January, 1953, issue of PIT AND QUARRY, has developed some additional interesting information. Much of this work was done under the "Sinclair Plan". This process is said to be applicable to the conversion of existing dry- or wet-process plants, or to the construction of new plants. It may be applied to the processing of raw materials, or clinker, or both, according to Mr. Witt.

In converting a wet-process plant for this process is it stated that no additional major units are required. The presence of some water in the raw materials is permissible but the maximum has not been determined. There are apparently no restrictions in the selection of raw materials, and it is believed that flotation can be used in conjunction with this process. The characteristics of non-aqueous slurries have been studied, and these indicate advantages over water slurries. Tests have also demonstrated that this slurry is easily filtered. No cracking has been observed in the liquid during volatilization, and a satisfactory procedure has been developed for condensing the vapor.

Silica Firm is Purchased By Carborundum Co. of N. Y.

The American Tripoli Corporation of Seneca, Mo., producers of tripoli powder from a form of silica found in the foothills of the Ozark Mountains, has been sold to the Carborundum Company of Niagara Falls, N. Y.

The announcement was made by the J. C. Miller Company of Grand Rapids, owners of American Tripoli since 1947. The price was reportedly in excess of $2,500,000.

Showmanship Theme of Book Of National Safety Council

Showmanship in Safety, the National Safety Council's new book of attention-getting stunts and gimmicks, offers more than 150 ideas for displays, demonstrations, stunts, awards, and other interest-arousing devices.

This booklet sells for $1.25 to Council members, $2.50 to nonmembers. For further information and quantity prices, write to the National Safety Council, 425 North Michigan Ave., Chicago 11, Ill.

No engine repairs in 12,300 hours!

The Caterpillar D13000 Diesel in this 1½-yard Link Belt Speeder dragline has needed two valve adjustments in more than 12,300 hours – and *nothing* else! "Not even cleaning the carburetor of the starting engine," says Bruce Harris, superintendent of Northern Virginia Construction Co.

This rugged Cat* Diesel loads 1800 yards of sand and gravel every ten-hour day, 24 days a month, the year around. "We have cold, damp weather from the ocean in the winter, and sand and dust in the summer, but our D13000 keeps on purring," Mr. Harris says. "We're really getting economical operation."

And, if you're interested in economy, here's more: all Caterpillar Diesels can deliver full power, and idle without fouling, on low-cost No. 2 furnace oil. And to cut costly down time to a minimum, your nearby Caterpillar Dealer is always ready to provide fast, skilled service and genuine factory parts.

There are 12 sizes of engines and electric sets to 500 HP and 315 KW. Leading manufacturers can supply Caterpillar power in their equipment; and when it's time to repower, it's time to see your Caterpillar Dealer. Ask him today for on-the-job performance *proof* of the dependable, pamper-free Cat Diesel that's best suited to your requirements.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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SPECIFY CAT POWER FOR HIGH-PROFIT PERFORMANCE

N.S.G.A. Holds Conference On Use of Sand and Gravel In Bituminous Mixtures

The National Sand and Gravel Association and the University of Maryland held their first "Conference on Use of Sand and Gravel in Bituminous Mixtures" at the University of Maryland, College Park, Md., on March 2, 3, and 4. The inauguration of this new activity was prompted by the increasing market for sand and gravel provided by the rapid growth of bituminous construction. The widespread interest of the industry in this subject was evidenced by the enrollment of 58 students, representing 19 different states, the District of Columbia, and Canada.

Instruction was in the form of discussion sessions led by engineers with broad experience in the field of bituminous mixtures. Represented on the faculty were George H. Dent and J. H. Goshorn, The Asphalt Institute; Carl A. Carpenter and Paul F. Critz, Bureau of Public Roads; and A. Duke Morgan, North Carolina State Highway and Public Works Commission. The discussion sessions were supplemented by an inspection of the Bituminous Laboratory at the Bureau of Public Roads, where methods of designing and testing bituminous moistures were demonstrated.

Lime Stabilization of Roads Topic of New Publication

One of the more recent methods of stabilizing soils and soil-aggregate mixtures for base and sub-base construction of roads is with lime, either quick or hydrated. For the first time the whole story of lime stabilization —its diverse methods of application, its potentialities, its limitations, its methods of evaluation, salient facts of 26 different lime projects, and cost data—are contained in a new 68-page book, *Lime Stabilization of Roads*, which has been published by the National Lime Association.

The book contains 21 photographs and 21 combined graphs, charts, and tables, as well as a selected bibliography of 24 different references. Single complimentary copies will be sent promptly to all inquirers.

Huntley Industrial Minerals Ups Output with New Mill

Installation of a new mill at the Laws (Calif.) plant of Huntley Industrial Minerals, Inc., has increased this firm's output of high quality slate, talc, clay, and other nonmetallic products.

The company has developed slate and clay properties in Inyo and Mono counties; talc deposits in Inyo County; and mica, asbestos, and other properties in numerous areas. Wright H. Huntley is president.

Company officials plan to rebuild the plant at Zurich, Calif., which was recently destroyed by fire with a loss of approximately $150,000. Erected in 1930 and acquired by Huntley Industrial Minerals in 1951 from Blue Star Mines, the Zurich plant treated about 1,000 tons of material per month.

Three Sulphur Companies Record Higher Gains in '53

Net income in 1953 for the Freeport Sulphur Company as reported by company officials, was $8,536,335 ($3.56 per share), compared with the 1952 total of $7,325,750 ($3.05 per share).

Duval Sulphur & Potash Company also showed an increase in net income over the previous year, with a total in 1953 of $3,045,162 ($3.05 per share), compared with the 1952 figure of $2,681,309 ($2.68 per share).

Reported 1953 net income of the Jefferson Lake Sulphur Company was $1,486,762 ($2.02 per share). Net income for 1952 was $1,231,560 ($1.65 per share).

Slight Increase Reported In October, 1953, Lime Sales

In October, 1953, domestic sales of open-market lime (705,494 short tons) increased very slightly over the previous month, according to reports by producers to the U.S. Bureau of Mines. Building and chemical and other industrial uses increased over the previous month, whereas decreases were noted for agricultural and refractory uses. The table shows sales by types and major uses.

J. E. Kennedy, K.-V.S. Head, Honored by 275 Guests At 91st Birthday Fete

More than 275 persons—employees and management of the Kennedy-Van Saun Manufacturing and Engineering Corporation and many others—gathered on April 12 at Danville, Pa., to honor J. E. Kennedy, president of the firm, on the 91st anniversary of his birthday. To express their loyalty and admiration for Mr. Kennedy, department heads and 25-year employees presented him with a silver cigar box.

Mr. Kennedy responded with an address in which he told of some of his early experiences in the business and expressed his appreciation for the evening's honors.

Natl. Gypsum Co. Announces Plans for Activity in Canada

Chairman Melvin H. Baker of the National Gypsum Company has announced that the company may construct a gypsum products plant in Canada. No decision has been made on the location of the plant or just when it will be built. However, a company spokesman said National Gypsum "definitely intends to get into the Canadian market to manufacture building materials".

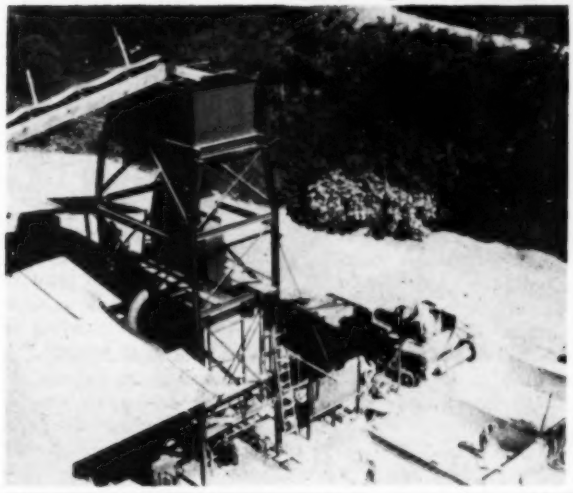
The plant may use gypsum which will be taken from quarries in a giant new gypsum deposit now under development by the company about 30 miles northwest of Halifax in Nova Scotia. Mr. Baker said that engineering plans for the project have been completed and initial gypsum shipments from this location are expected early next year. The company has earmarked about $5,000,000 for the development.

Lime Sold by Producers in the United States, in Specified Periods of 1952-53, by Types and Major Uses, in Short Tons[1]

	September	October		January–October	
	1953	1953	1952	1952	1953
By types:					
Quicklime	539,971	538,000	582,078	4,846,235	5,532,309
Hydrated lime	165,318	167,494	168,379	1,572,325	1,598,927
Total lime[2]	705,289	705,494	750,457	6,418,560	7,131,236
By uses:					
Agricultural:					
Quicklime	9,578	8,602	7,424	54,385	60,134
Hydrated lime	16,984	13,090	13,117	175,457	171,383
Total	26,562	21,692	20,541	229,841	231,517
Building:					
Quicklime	17,810	18,232	19,868	179,704	164,569
Hydrated lime	85,158	89,469	89,473	796,737	795,089
Total	102,968	107,701	109,341	976,441	959,658
Chemical and other industrial:					
Quicklime	320,759	325,267	350,182	3,084,130	3,350,583
Hydrated lime	63,176	64,935	65,789	600,131	632,455
Total	383,935	390,302	415,971	3,684,261	3,983,038
Refractory (dead-burned dolomite)	191,824	185,899	204,604	1,528,016	1,957,023

[1]Also includes a small quantity of captive tonnage (6-7 percent of the total reported herein) to maintain comparability with the annual lime statistics.
[2]Approximately 60 percent of lime produced is high-calcium and 40 percent high-magnesium.

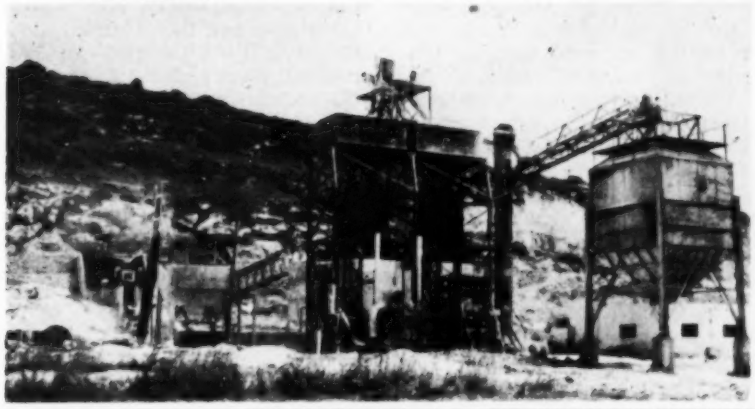
MODERN EQUIPMENT UTILIZED IN OVERSEAS LIME OPERATIONS

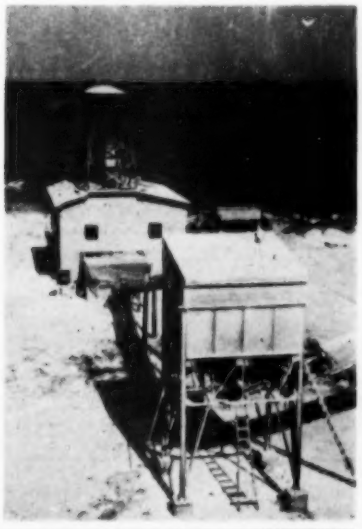


Left: The new Alfredo de la Sota lime plant in Caracas, Venezuela, which uses Ellernan calciners.

Below, left: New facilities of the Consolidated Lime Works, Ltd., near Zikhron, Israel, showing two Ellernan calciners. Five of these units are now operating in Israel.

Below, right: Inagua Magnesium Products, Ltd., operates this new Ellernan lime plant on the island of Inagua in the Bahamas.





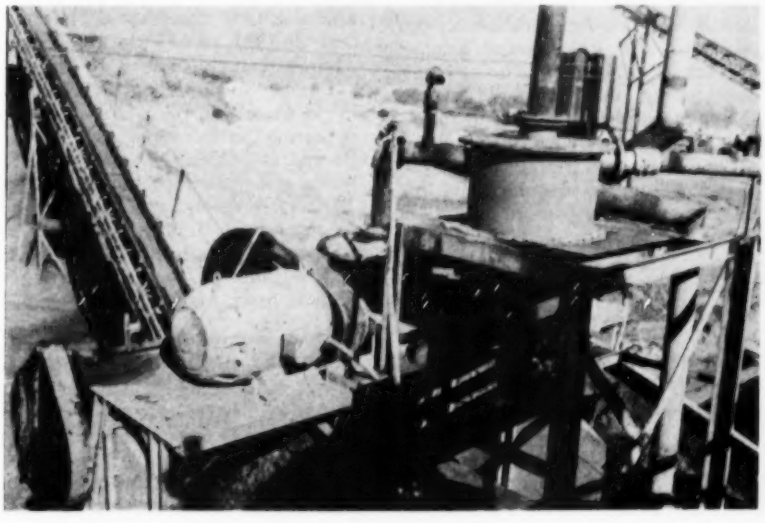
Wet Cyclones Raise Output Improve Plant Efficiency For California Concern

Three problems of production have been solved at the plant of the Torrance Sand & Gravel Company, Torrance, Calif., following the installation of two Cottrell 25-in. Whirlcones in the sand circuit.

According to C. W. Shephard, one of the owners, the wet cyclones, arranged in series to handle the waste discharge from two screw classifiers, are (1) recovering sufficient fine sand in the minus 50-mesh range to enable the product to meet any specification; (2) adding about 10 tons hourly of salable material in the stockpiles which was formerly lost in the overflow to the ponds; and (3) improving settling-pond life and efficiency by extracting about 2,500 tons of fines per month before the dirty water is discharged to the ponds.

A Kansas City Hay Press pump raises the waste coming over the classifier weirs to the upper cyclone, while the second unit, set a couple of feet lower, is fed by the overflow from the first by gravity. It is planned shortly to raise the upper cyclone another 5 or 6 ft. to increase the vacuum and—it is hoped—to effect still greater recovery by the second.

Two 25-in. wet cyclones arranged in tandem recover about 10 tons hourly of minus 50-mesh sand from waste at the Torrance plant.



30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE May, 1924, issue of PIT AND QUARRY was not heralded as a special lime number as it is now but it did contain a number of articles on that industry. It was also notable for a number of special articles, on lime and other subjects, written by leading authorities exclusively for PIT AND QUARRY. One such article, by Glenn Griswold, editor of the Chicago *Journal of Commerce*, was entitled *The Federal Reserve System, Will It Survive?* In a penetrating article he pointed out the danger to the Federal Reserve System, which was a political football at that time.

One of the special lime articles was on the subject of *Scientific Study and Control of Lime Kilns*, by Victor J. Azbe. In it he indicated the many ways in which lime producers can improve their products and lower their production cost by the proper design and operation of kilns.

In *Study the Quarry in Back of Your Lime Plant* R. N. Van Winkle, consulting engineer, advocated changing from hand to power-shovel loading wherever possible. This can often be done by installing a larger primary crusher and producing crushed stone as an added item. He also cited the advantage of operating rotary kilns as well as the vertical type in order to use up the fines unavoidably produced.

Mining Limestone for Lime Manufacture by Oliver Bowles, U. S. Bureau of Mines, mentioned the trend toward underground mining due to the growing difficulties being encountered with open-pit operations. He urged producers to familiarize themselves with this method of operation and stated that there would be a growing necessity for adopting it as the more accessible deposits became depleted. Mr. Bowles gave a comprehensive comparison of the two methods, with their advantages and disadvantages, and described the mining methods being used by specific operators under different conditions.

The Classification and Marketing of Lime by Harvey S. Owen, chief engineer of the Western Lime & Cement Company, was another article written especially for PIT AND QUARRY. In it the author described the various markets for lime and the potential markets which could be developed. He also advised study of the various characteristics required in lime for various uses in order better to serve those industries.

Judging from the announcement of the coming National Lime Association convention, this was to be an interesting and important affair. It was to be held at White Sulphur Springs, W. Va., from May 20 to 23, 1924. According to Burton A. Ford, general manager of the association, this meeting was to be the first to provide time for pleasure as well as business. Meetings were scheduled for each morning, and the afternoons were open, a procedure still being followed.

There were several outstanding plant operating articles in this issue. One described the new plant of the William L. Urschel Lime & Stone Company at Gibsonburg, Ohio, which had a capacity of 300 tons of lime and 2,000 tons of stone daily. The equipment included 18 Arnold & Weigel kilns and a new type of batch hydrator invented by Frank Weber, plant superintendent.

Also described were two new cement plants. The new plant of the Pittsburgh Plate Glass Company at Fultonham, Ohio, was located at a quarry which had been operated to supply limestone for the company's chemical plant at Barberton, Ohio. This wet process plant had a capacity of 2,500 bbl. daily.

The Sandusky Cement Company's new plant at Silica, Ohio, set a construction record. Work was begun on June 28, 1922, and the first cement was shipped on May 1, 1923. This dry process operation had a capacity of 3,000 bbl. daily.

The plant of the Northwest Gypsum Products Company at Gypsum, Mont., began operations on January 1, 1922. The room-and-pillar system of mining was used. Calcining of the gypsum was done in kettles.

Among the new plants announced in that issue were three gravel plants, those of the Perkins Sand & Gravel Company, San Fernando, Calif., the Wilfert Sand & Gravel Company, Eugene, Oreg.; and the Service Rock Company near Friant, Calif. The California Rock Company also announced plans to build a large new plant at Livermore, Calif., and the Trinity Portland Cement Company stated it would double the 2,400-bbl. capacity of its plant at Fort Worth, Texas.

Three cement companies revealed proposed new facilities: the Clinchfield Portland Cement Company's 2,000-bbl. plant, to be built near Perry, Ga., at a cost of $2,000,000; the American Portland Cement Company's plant at Imperial, Calif.; and the Titan Cement Company's 1,200-bbl. mill in West Virginia.

Pumice, Pumicite Production Drops 20% from 1951 Total

From a record output of 749,942 short tons in 1951, production of pumice and pumicite in the United States in 1952 declined over 20 percent in 1952 to 597,044 short tons, while its value decreased 18 percent.

Pumice and pumicite were mined in 14 states during 1952, with 57 operating units reporting to the Bureau of Mines. New Mexico was the largest pumice-producing state in 1952 (7 firms reporting), followed in order by California (23), Idaho (4), and Colorado (2). No commercial output was reported east of Kansas, and Alaska reported none.

Illinois Geological Survey Issues '52 Production Report

The Illinois State Geological Survey, a leading geological survey, recently published *Illinois Mineral Industry in 1951 and 1952* by Walter H. Voskuil. The 52-page report summarizes the latest production data available on the state's coal, coke, petroleum, and nonmetallic minerals industries, the latter being comprised of stone, sand and gravel, silica sand, cement, clay, and fluorspar.

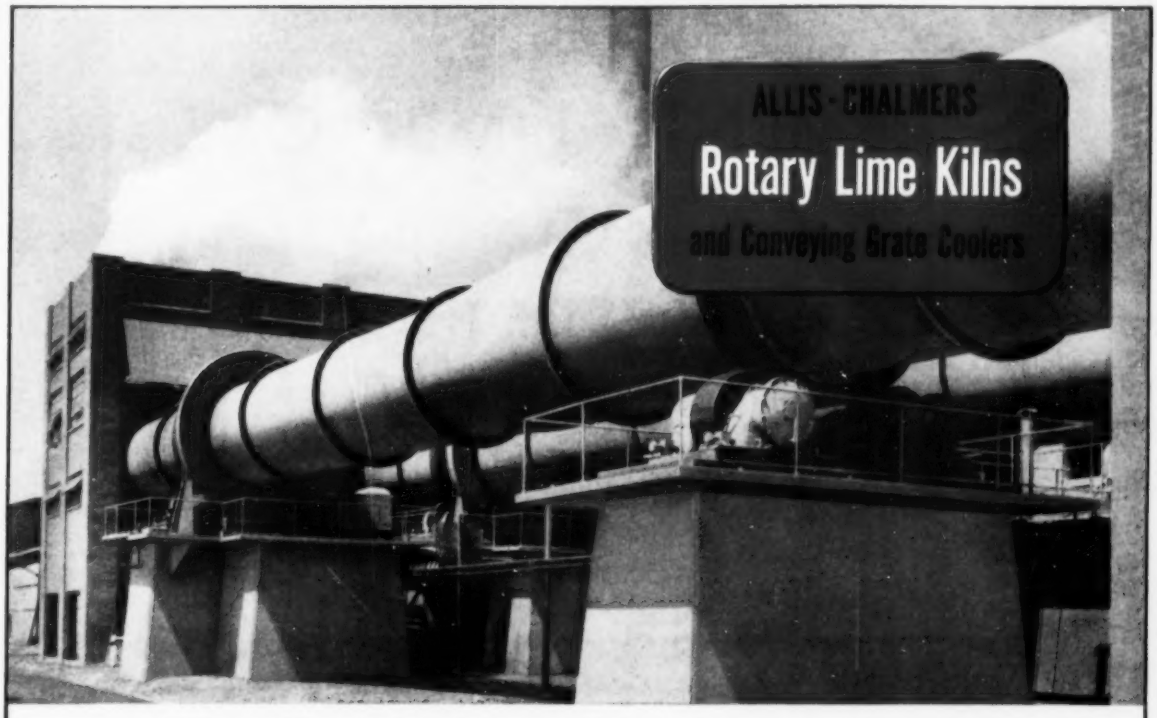
According to the report, stone and sand and gravel production declined 26 and 20 percent respectively in 1952 from 1951, while special sand production (including silica sand and molding sand) increased 4 percent. In 1952 stone output approximated 14,000,000 tons; sand and gravel, 12,200,000 tons; and special sands, 2,900,000 tons.

● Correction

In the March, 1954, issue of PIT AND QUARRY, page 79, it was stated erroneously that under the proposed Revenue Revision Bill the end-use test for limestone would apply in determining percentage depletion rates. Actually, this report reaffirms the 15 percent rate allowed for chemical and metallurgical limestone, regardless of the use to which it is put.

Pit and Quarry Special

SEVENTEENTH ANNUAL LIME and AGRICULTURAL LIMESTONE SECTION



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How Can The Extension Service Promote Agricultural Limestone?

another P and Q exclusive

WHY don't farmers use enough limestone? We need to answer that question before we can analyze the part that the Extension Service can play in promoting limestone. It

By SAMUEL R. ALDRICH
Agronomist
Cornell University, Ithaca, N. Y.

seems to me that there are five important reasons:

1. Farmers don't fully realize how profitable the use of limestone is
2. They don't know whether or not they need limestone, and, if so, how much.
3. They need more information on how, when, and where to apply limestone.
4. They lack cash or credit.
5. Too few people are actively "selling" limestone.

Perhaps you will accept these as five important reasons, although not the only ones. Now let's see what the Extension Service (agricultural college specialists and county agricultural agents) can do to eliminate each stated reason.

Does Limestone Pay?

The farmers' first question is, "Does it pay to lime?" The Extension Service can supply the answer from research results and from farm observations and demonstrations. The pictograph in Figure 1 presents data from an experiment on acid soil. This picture is taken from a circular which was mailed to nearly all commercial dairymen in New York (80,000 copies). Other state experiment stations have equally convincing data. Research data are needed to give a precise measure of yield increases. One of the principal responsibilities of extension specialists is to interpret research results for farmers and those who advise farmers.

Observations on farms and the results of local demonstrations established specifically to show the effect of limestone are sometimes more convincing to farmers than research data obtained on distant experiment farms. Both college extension specialists and local county agricultural agents have a place in these demonstrations.

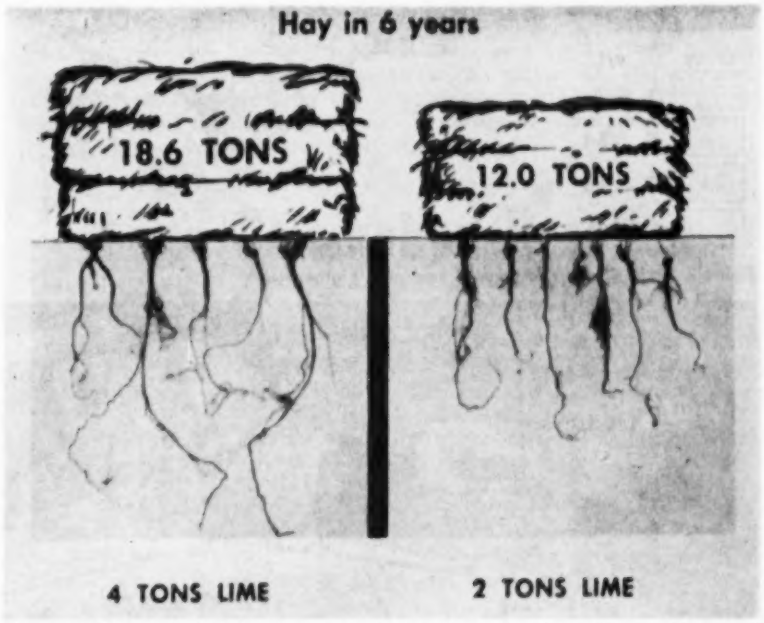


Figure 1. Pictograph chart based on research data shows the relation between liming and yield.

Does My Farm Need Lime?

When a farmer accepts the fact that limestone pays on acid soils, he next wants to know whether his farm is acid. The Extension Service can help him in several ways. The most specific and direct way to help a farmer determine the situation in his soil is to test it for pH and limestone requirement. Nearly every college of agriculture has a soil-testing laboratory in which tests can be made, often free of charge. Each central state laboratory tests from about 10,000 to 100,000 samples every year. The results of these tests can be tabulated and used to prepare a generalized map of the state to show the pH of soils (Figure 2).

County agricultural agents in most states are equipped to make pH tests for farmers. In many states county agents as a group test more samples than the state laboratory. Furthermore, county agents often go to the farm and actually test the farm field by field. A few enterprising county agents tabulate the results of their tests and spot them on the county soil map. This is an excellent teaching tool for farmer meetings.

The New York Extension Service has initiated a new kind of soil-testing service for its farmers. The sole purpose of the program is to promote the use of agricultural limestone. A simple soil-testing kit is being assembled and distributed *for use by farmers*. The kit includes two standard indicator solutions in unbreakable plastic bottles with dropper caps, a spot plate made to order, a standard color chart, a leaflet telling how to sample and test soil, and an Extension Bulletin entitled *More Lime on Your Land*, which supplies liming recommendations. About 14,000 kits have been supplied to farmers in 2½ years. These should have a significant effect on limestone usage. The program's premises follow:

1. Farmers can be taught to make soil tests.
2. Farmers themselves have stronger reasons than anyone else for accurate testing.
3. Tests of a fair degree of accuracy made on several samples in the field are at least as valuable as a more precise test made on one composite sample in the laboratory.
4. More tests will be made than if the testing were done only by county agents or a state laboratory.
5. More tests will get more limestone used.

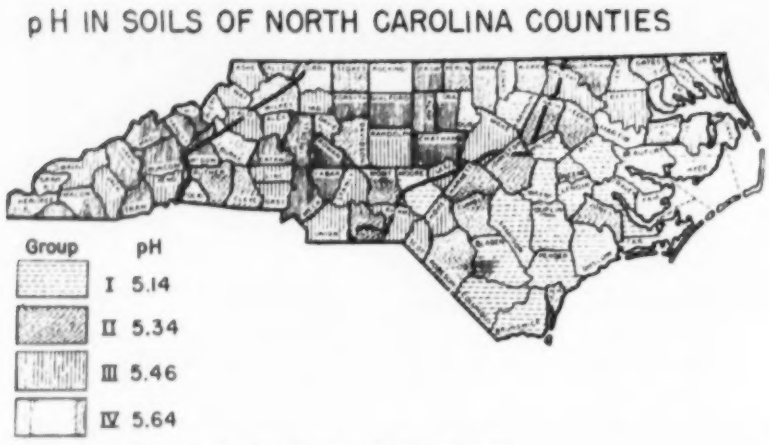


Figure 2. Maps show the location of acid soils in given states.

Figure 3. State Extension bulletins tell how to use limestone.

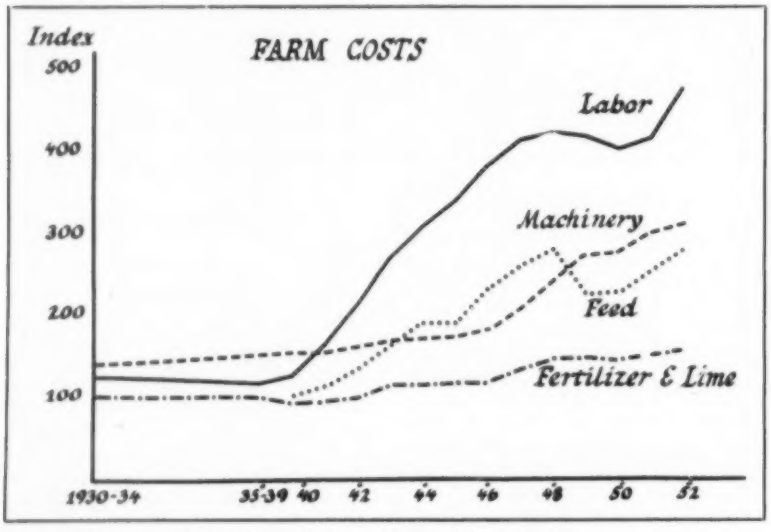


Figure 4. Limestone is favorably priced, as this graph demonstrates.

To assure widespread and accurate use of the test, the extension agronomists have prepared a 10-minute movie, a color slide series, and a small leaflet showing the steps in sampling and testing. These are available to county agricultural agents, vocational agriculture teachers, and field men for the limestone companies.

When, How, and Where to Apply Limestone

Nearly all state extension services have bulletins to help farmers answer these questions (Figure 3). The Experiment Stations in Ohio, Pennsylvania, New York, New Jersey and Maryland, together with representatives of the U.S.D.A., teamed up to prepare a special bulletin, *100 Questions and Answers on Lime*. This bulletin was an outgrowth of a cooperative research project which received financial assistance from the National Lime Association.

In addition to their regular bulletins, extension services in the various states prepare special circulars, letters, and news stories on the use of limestone.

Extension agronomists and county agricultural agents regularly advise with state and county Agricultural Stabilization and Conservation committees to help assure maximum efficiency in the use of public funds in buying enduring conservation.

Where to Get Cash or Credit

The fundamental problem here is not that farmers don't have money for limestone, but rather that they choose to spend their money for fertilizer, machinery, feed, new automobiles, television sets—anything but limestone. Why should limestone be the first production item to suffer when farmer's income falls? The index of farm costs (Figure 4) clearly shows that limestone purchases should be the last place for farmers to try to cut expense in 1954. If farmers are presented the economic facts about the use of limestone in a sufficiently convincing manner, they will make the correct decisions.

There is a common belief that banks cannot or will not extend production loans for 18 months to 3 years for such items as hay and pasture seeds, fertilizer, and limestone. The return from these does not come in the seeding year. Agricultural bankers indicate that they are permitted to make such loans. Many banks encourage farmers who have a sound credit rating to apply for such loans. They point out, logically enough, that once a farmer has a well-established liming program on his farm, he should be able to operate on normal short-term production

loans. The extra return from fields limed in previous years should help to pay the current limestone bill.

Wisconsin has a unique system worked out among the farmer, the local banker, and the Extension Service. The Extension Service determines the amount of lime and fertilizer needed for growing good stands of alfalfa. The local bank loans the farmer sufficient money at a low rate of interest to buy the lime and fertilizer needed to raise the pH of the plow layer to 6.5. The farmer agrees to repay the bank the amount of the loan from the additional income which he receives by feeding this high-quality forage to his dairy cows. Usually the loan does not need to be repaid for two years since it takes that period of time to produce a good alfalfa crop.

Who "Sells" Limestone?

The Extension Service cannot merchandise limestone. Perhaps their contribution is to "soften up" the potential customer. Who will follow up with a farm visit and write the order?

The Extension Service spends thousands of dollars every year to help promote lime. Its staff prepares bulletins, circulars, radio talks, and farm press stories. These men discuss limestone use with thousands of farmers in meetings every year.

An especially important approach that is applicable anywhere can be illustrated by a special program in New York. Extension specialists and county agents have an annual series of regional conferences with local seed, feed, and fertilizer dealers, who have volunteered (with a little prompting by extension workers) to promote the use of limestone *even though they do not merchandise it as a commodity.* Dealers readily understand that limestone on acid soils is indispensable to farmer success and satisfaction with the seed and fertilizer they sell. At first some dealers felt that they would lose on their feed business if they promoted a sound crop production program including limestone. They soon decided that this fear was unfounded. The farmers with the best crops were the best feed customers, *and they paid their bills.*

The Extension Service can supply facts and ideas for commercial advertising of limestone (Figure 6). The companies must, of course, use care to avoid the appearance of Extension Service endorsement of brand names.

Agricultural colleges in many states hold conferences with representatives of the limestone industry to present the results of current research and to discuss mutual problems.

The Extension Service can help industry field men to get established and supply them with bulletins, leaflets, charts, slides, and sometimes movies.

More people not employed by limestone producers are helping to promote agricultural limestone than any other agricultural commodity. The Extension Service represents only one group that goes all out to promote the use of this indispensable item on acid soils.

Tokyo sources report that the current "cement boom" in Japan will continue during 1954. It was stated that by the end of next year about 18 Japanese cement manufacturing concerns, operating 44 plants, will turn out an estimated 1,245,000 metric tons each month. At present 16 firms, operating 37 plants, produce 931,000 tons monthly.

Lime Calcination Reaction

THE German technical magazine *Zement-Kalk-Gips* (Cement-Lime-Gypsum) often publishes articles of interest to lime producers. These are in German, but at the end of each article are summaries in English, German, and French which give a general idea of the subjects discussed and any conclusions reached. The October, 1953, issue had several articles on lime and limestone, the most interesting of which was entitled *Physico-Chemical Investigations on the Burning Intensity of Quicklime and on Reactions and Influences during the Burning Process"* by J. Wuhrer. The summary of this article follows.

"I. Burning intensity of quicklime — The burning intensity of quicklime is characterized by specific weight, porosity, size of particles and extent of the inner specific surface. At any temperature the lime develops a trend for a specific burning intensity which becomes conspicuous after a certain period of time. This period of time increases with the increasing size of the lump and goes down with an increasing temperature. At low temperatures a soft brand of lime is produced. The latter has a low specific weight and thus a high porosity. The CaO-crystallites exist in the form of uniform grains and are very small. Accordingly, the inner specific surface is a very large one. On the contrary, sintered lime with a low porosity has a high specific weight and its specific surface is practically reduced to zero.

The optimum soft brand which may be obtained is designated as a theoretical soft brand. It is formed directly during the calcination and will remain constant only below 900 deg. C. in the long run. Sintered lime has a specific weight of more than 2.45. The sintering sets in beyond 1150 deg. C., and the process is all the more quick and complete the higher the temperature mounts.

"II. Burning intensity and slaking reactions — Slaking velocity and the velocity of the temperature gradient in the solution are directly proportional to the specific surface. The specific surface of sintered lime may be increased by grinding which simultaneously increases the slaking velocity. In the case of a soft brand, however, no improvement is possible because its inner surface is so high that it cannot be increased any further by grinding.

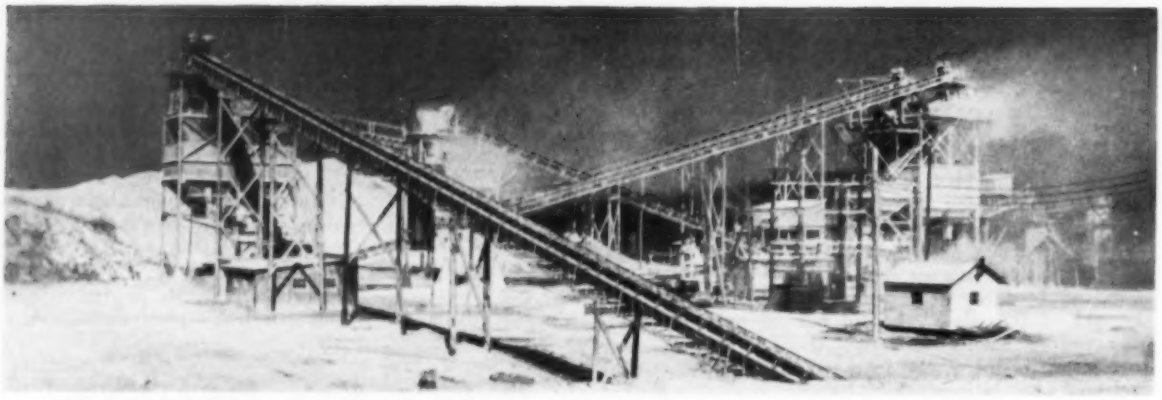
"III. Burning reactions—The calcination of lump-limestone takes place in a small zone proceeding from the exterior to the interior. The dissociation temperature goes slightly up with increasing burning temperature and goes down—at a constant burning temperature—as the calcination zone enters into the lump. The temperature prevailing on the surface of the lump differs very little from the gas temperature, which means that the main temperature gradient exists in the lump itself.

"The sintering process of the quicklime and the formation of sintered lime start from the surface. Both are intensified by the increasing size of the lump as well as by the increased temperature, in particular, however, if after the calcination the influence of the temperature is still maintained.

"The heat conductivity coefficient of a softly burned lime made from dense limestone is $\gamma = 0.8$ kcal/m h deg. C. The burning time T may be computed by the following equation:

$$T = \frac{\varrho \cdot R \cdot a^2}{2\lambda \cdot \triangle \vartheta \cdot 10}$$

This equation is only valid if the heat is introduced in parallel direction; if the stones have cube-, ball- or still another shape, a correction factor must be used in each case."



General view of the Mitchell crushed stone plant, which turns out a wide range of specification aggregates and agstone at a 350 t.p.h. clip. The conveyor in the foreground leads to the primary scalping screen; the finish screens and rail tracks are located on the right.

Indiana Quarry Strategically Located To Serve Regional Agstone Market

another ON THE SPOT report

ONE of the largest modern crushed stone operations to be developed recently in Indiana is that of the Mitchell Crushed Stone Co., Inc., an affiliate of Ralph Rogers & Co., Bloomington, Ind. The quarry, which

By KENNETH A. GUTSCHICK

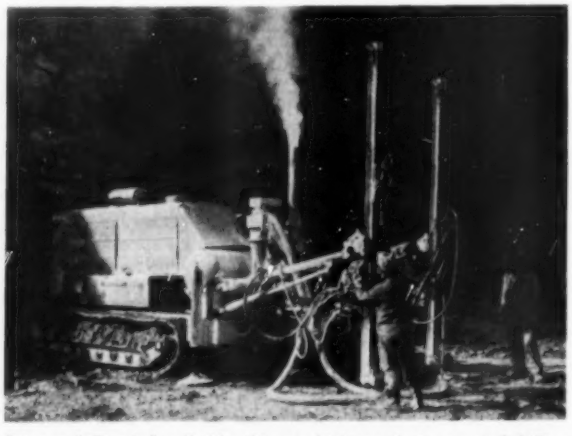
was opened in 1952, is located among the hills of southwestern Indiana about 5 miles west of Mitchell on Highway 60, and is served by a major railroad. Operating at a rate of nearly 350 t.p.h., the plant produces a complete range of specification aggregates for both concrete and road work, as well as large amounts of agricultural limestone.

Quarry site based on extensive geological studies; 350 t.p.h. operation features new primary drill

Perhaps the most newsworthy feature of the Mitchell operation concerns the quarry location itself and the factors involved in determining the site. Geologically the quarry is situated as far west along the B. & O. R.R. as is possible within the outcropping of the Ste. Genevieve-Paoli formations (Mississippian age) — a physically sound, high-calcium limestone deposit which is excellent for both agricultural limestone and construction aggregates. Due to the scarcity of economically suitable surface deposits of high-calcium limestone in western Indiana and eastern Illinois, and hence, the almost complete absence of limestone quarries there*, the Mitchell quarry is able to extend its service area into central Illinois. Thus the Mitchell quarry is strategically located with respect to an important Midwestern agstone market.

Before deciding on a quarry site in the Mitchell area, the Mitchell quarrying firm made an extensive geological study of the area. In this investigation the Geological Survey, Indiana Department of Conservation, located at Bloomington, Ind., gave valuable assistance, first in furnishing general advice about the distribution of limestones (particularly

A quarry loading scene showing a 2-cu. yd. diesel shovel loading a heavy-duty truck; loads average 18 tons. The quarry is developed in the Paoli-Ste. Genevieve high-calcium limestone formations.

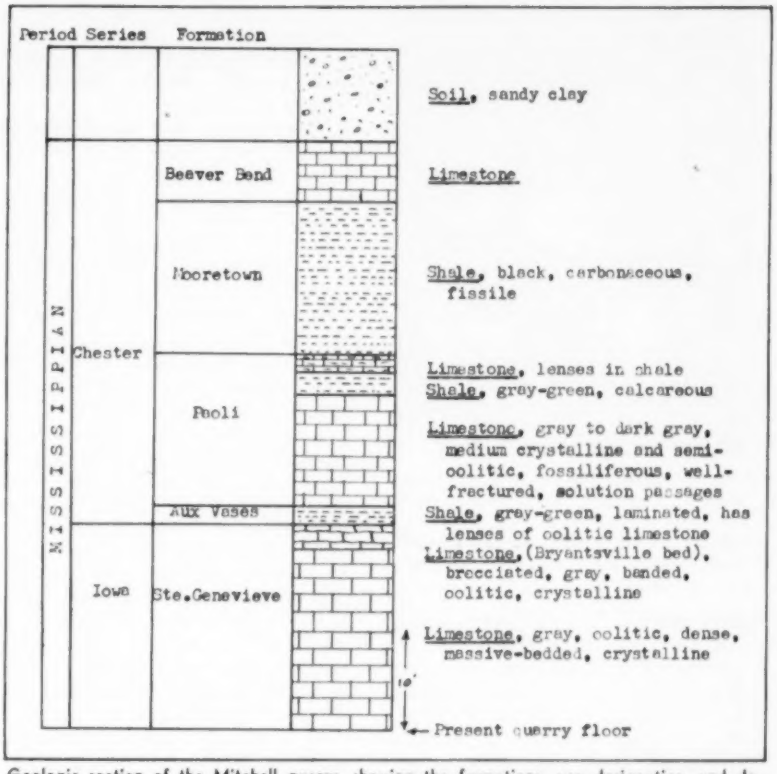


Primary drilling is handled by this new high speed air-operated drilling machine, equipped with twin pneumatic drills. The drilling rate approximates 100 f.p.h. (2-in. holes).

high-calcium) in the area under consideration and then by examination of drill cores obtained by the company in their extensive core drilling program. These core studies provided valuable information relating to thicknesses and depths of various limestone formations, thickness of overburden, etc. The site was finally chosen on the basis of economics as determined by the cores and depth of overburden studies, coupled with the proximity to excellent rail and road transportation facilities.

The Mitchell quarry is located ½ mile west of the old Nally, Ballard, and Cato quarry, which was operated from 1946 until January 1, 1952. At that date Ralph Rogers & Co. bought out that firm and shortly thereafter dismantled the old stone plant and erected an entirely different plant at the newly acquired quarry site. Much of this plant had originally been set up at Ralph Roger's large crushed stone operation near Denver, Colo. (Denver Crushed Stone Co., Inc.), which was dismantled and shipped to the Indiana quarry early in 1952. Equipment was then erected, along with the new hoppers, and the plant began operating in July, 1952. A new hammermill for the production of agstone was added in 1953.

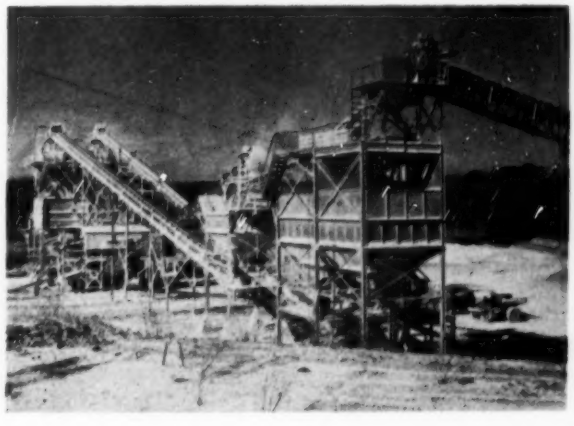
Several other notable features characterize the Mitchell operation, including the use of a new type of primary drilling machine; a combination of jaw and cone crushers and a hammermill for crushing; electric vibrating feeders serving the secondary and tertiary crushers; and belt conveyor weighing devices for weighing stone shipped by rail (in lieu of a track scale). In addition the firm has a modern garage and machine shop which can handle most types of repair work. The plant is also completely electrified. In addition the plant exhibits a large degree of flexibility, thereby permitting the production of a wide range of sizes.



Geologic section of the Mitchell quarry, showing the formations, age designation, and description of rock types present. The overburden extends to the base of the Mooretown formation. (Data obtained from Geological Survey, Indiana Dept. of Conservation, Bloomington.)

Geology The quarry is situated in a major valley of the Crawford upland physiographic province. Because of this valley location, the overburden is relatively thin compared to the adjacent upland. The overburden averages about 20 ft. in thickness, consisting of about 10 ft. of soil, which is underlain by alternating thin limestones and shales. (See accompanying detailed geologic section.) The soil is removed by LaPlant-Choate scrapers, while the shale and limestone portion is drilled with wagon drills, blasted, and then removed by a Lorain shovel and Euclid trucks; the waste material is dumped east of the quarry.

The quarry penetrates the entire Paoli (Chester series) formation and the upper portion of the Ste. Genevieve (Iowa series) formation. The Ste. Genevieve limestone is generally thin bedded, gray to dark gray, fine to coarsely crystalline, oolitic and high in calcium carbonate content. (This formation represents a major reserve of high-calcium limestone in Indiana.) The uppermost bed of the formation is a brown, rubbly, brecciated, dense limestone referred to as the "Bryantsville" bed. The Paoli



Closeup of the plant, showing the scalping screen in the foreground. The two paralleling 30-in. conveyors lead to the finish screens; the return conveyor issues from the tertiary crushers to a 5- by 14-ft. 2-deck screen, which produces fine-grade agstone.

*The explanation of the lack of suitable limestones to the west of Mitchell lies in the fact that the area is part of the Illinois structural basin, the center of which is located in south central Illinois. The basin can be likened to a series of shallow bowls, one placed inside the other, with each bowl representing a particular geologic formation of sedimentary rocks. In the center of the basin are found the Pennsylvania age shales, sandstones, coal beds, and a relatively small number of thin limestone deposits. On the flanks of the basin, the older Mississippian age limestone deposits outcrop; these same limestone beds are about 2,500 feet below the earth's surface in the center of the basin.

The Mitchell quarry is located on the eastern flank of the basin, in a narrow outcropping of the Ste. Genevieve-Paoli formations. Proceeding to the west from Mitchell, these beds dip gently westward and thus are progressively farther beneath the surface. In the center of the basin they reach their deepest position (about 3,000 ft.). Farther to the west these same beds assume a gentle eastward dip and thus become progressively nearer to the surface. Finally they once again outcrop in the St. Louis area.

View of the primary 36- by 48-in. jaw crusher, which is driven by a 150 hp. electric motor.

limestone, also high in $CaCO_3$ content, is tan or gray, dense to granular, and oolitic.

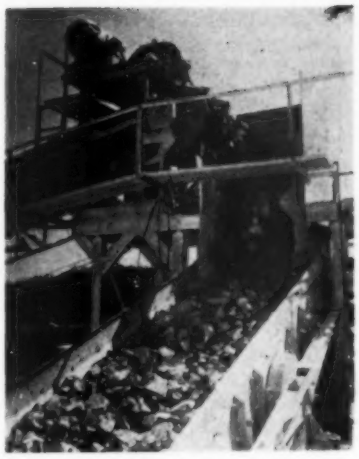
Quarrying Presently the quarry is being developed in benches of approximately 14- to 16-ft. in depth. The quarrying operation is carried on in an efficient well-integrated manner with the minimum of manpower. Generally one day's drilling and blasting provides sufficient stone for one day's production.

For primary drilling the company formerly used from 3 to 5 wagon drills; these have been replaced recently through the purchase of a new type high-speed air-operated drilling machine developed by the Ingersoll-Rand Co., called the Drillmaster (Type DM). The unit consists of a crawler-type tractor driven by a G.M.C. diesel engine, on which are mounted twin pneumatic drills. Drilling air is supplied by a DR-600 air compressor, which is mounted on the front of the tractor. The unit is equipped with a dry-type Rotoclone collector, which vents dust particles from each drill hole. Two hydraulic jacks provide stability during the drilling operation.

In an 8-hour shift the drilling rig generally puts down about 50 16-ft. holes (2-in. diameter); this represents a drilling rate of approximately 100 f.p.h. or 50 f.p.h. per drill. Because of the high drilling rate, the new machine has actually replaced three wagon drills. The general practice is to use a 2-in. dia. drill bit for the first 6 to 8 ft. and a 1⅞-in. dia. bit for the remainder of the hole. The holes are drilled on a 5- by 8-ft. spacing pattern (5-ft. burden), and in four rows. Austin 1½- by 8-in. 60 percent dynamite is used, which is detonated electrically with delay caps; generally 600 lb. of dynamite is used for a 50-hole shot, giving a yield ratio of about 4 tons per pound of explosive. The firing pattern consists of the use of MS-25 delay caps in the first two rows, MS-50 caps in the third row, and MS-75 caps in the last row. The shot is set off by means of a new Du Pont CD blasting machine. Fragmentation is excellent, thus requiring a minor amount of secondary blasting.

A Lorain 820 shovel, driven by a Caterpillar diesel engine, and equipped with a 2-cu. yd. Amsco bucket is used for quarry loading. Three Euclid 31FD end-dump trucks, handling 18-ton loads, deliver the stone to the primary crusher. The company also uses another Euclid 31FD and a 27D model for stockpiling purposes. The quarry is drained by means of two Jaeger gasoline pumps—one a 4-in. and the other a 2-in.

Stone Plant Major plant equipment includes a Lippmann 3648 primary jaw crusher, a Symons 4¼-ft. standard cone crusher, two Symons 4-ft. short head cone crushers, a Jeffrey 3630 pulverizer, and six Hewitt-Robins Gyrex 5- by 14-ft. multiple-deck screens, which are operated dry. One of the screens serves as a scalping unit, the others for producing finished product. In addition, there are two small Lippmann scalping screens used in conjunction with rail car loading.

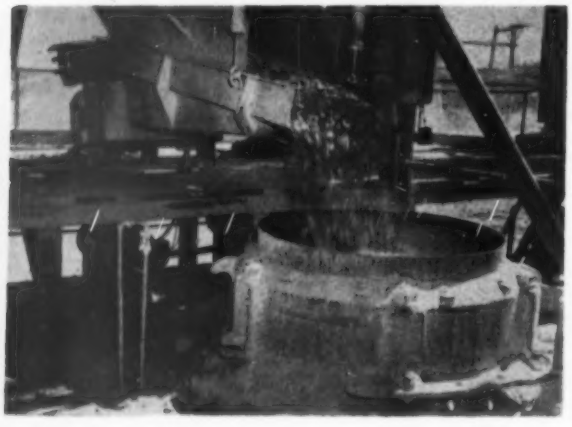


View of the 5- by 14-ft. scalping screen, which produces crusher run material; the oversize goes to a surge bin ahead of the secondary cone crusher.

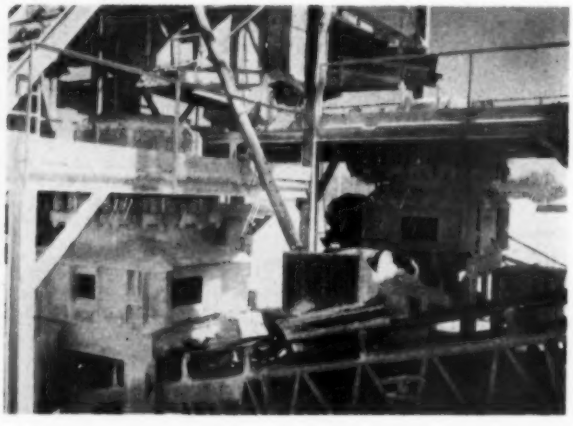
Stone from the quarry is dumped into a 35-ton steel hopper mounted over a Traylor 42-in. by 15-ft. apron feeder, which is driven by a G. E. 15 hp. motor through a chain and sprocket arrangement. Discharge to the 3648 jaw crusher is via a bar grizzly, which is used only when the stone is dry. The crusher is V-belt driven by a 150 hp. Marathon motor. A Detroit 2-ton hoist mounted over the crusher is used for freeing hung-up blocks.

The crusher product is then conveyed to the Gyrex 5- by 14-ft. scalping screen by a 36-in. by 308-ft. inclined belt conveyor, which is driven

Electric vibrating feeders, like the one shown here, serve the secondary and fine reduction crushers. The crusher shown there is the 4¼-ft. cone crusher.



View of the two 4-ft. cone crushers, each fed by an electric vibrating feeder. Note that the crushers discharge to the same conveyor.

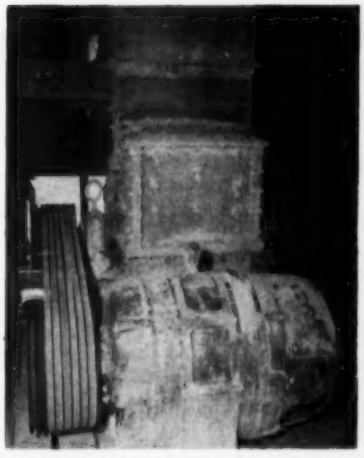


One of the two 5- by 14-ft. 3-deck finish screens, which produces the finer stone sizes, including agstone.

by a G. E. 60 hp. motor through a Falk reducer and chain and sprocket. The scalping screen is a two-deck unit, although only one deck is used; this is fitted with wire cloth having 1¼-in. openings. The screen is mounted over a 2-compartment 200-ton steel bin. One compartment is used for the oversize, serving as a surge supply ahead of the secondary crusher; the other is used for the minus 1¼-in., which represents crusher run stone.

The secondary crusher is a Symons 4¼-ft. standard cone crusher, which is driven by a G. E. 150 hp. motor through V-belts. The feed to the crusher is effected by a Jeffrey-Traylor electric vibrating feeder; this same type of feeder is used in conjunction with the plant's two other cone crushers and the hammermill. Material from the cone crusher is then conveyed on a 30-in. by 265-ft. inclined belt conveyor to the two Gyrex 5- by 14-ft. 3-deck secondary screens, where the load is split. (Provision is also made to chute material from the crusher run bin direct to the 30-in. delivery belt.) These two secondary screens, along with two other identical finish screens, are aligned in a row; they discharge to a set of six steel bins, each of 150-ton capacity. During the writer's visit, the secondary screens were fitted with 3-in., 1-in. and No. 8 mesh wire cloth; this, of course, is subject to change depending upon the stone sizes desired. The minus 3-in. plus 1-in. stone is chuted to a 100-ton surge bin serving the two fine reduction Symons 4-ft. cone crushers; the three other finished products, including the minus 8 mesh (agstone), are chuted direct to bin storage.

Material from the surge bin is divided and fed to the two cone crushers via the vibrating feeders. Provision is also made to feed the cone crushers direct from the bin storage via a short conveyor belt. Both cone crushers, which are V-belt driven by G. E. 150 hp. motors, discharge to a 30-in. by 126-ft. inclined belt conveyor; one of the crushers is mounted directly over this main belt, while the other feeds it via a short stub conveyor. The long conveyor then transfers the crusher product to a Gyrex 5- by 14-ft. double-deck screen which is mounted over a 75-ton steel agstone bin. This screen has ¾-in. and No. 8-mesh decks, the top deck serving to relieve the load from the bottom deck, which produces the agstone. Plus 8-mesh material from the screen is then conveyed by a 30-in. by 216-ft. inclined belt conveyor and split to the two 5- by 14-ft. 3-deck finish screens mentioned earlier. The drive for this conveyor, as well as the conveyor leading to the secondary screens, is a Link-Belt roller chain drive powered by a 40 hp. motor. The decks on each of these finish screens is fitted with ¾-in., ½-in., and No. 8-mesh wire cloth, thereby producing Indiana 9, 11, and 12 stone, as well as agstone. By changing the screen cloth, however, other small-size specification stone can be produced.



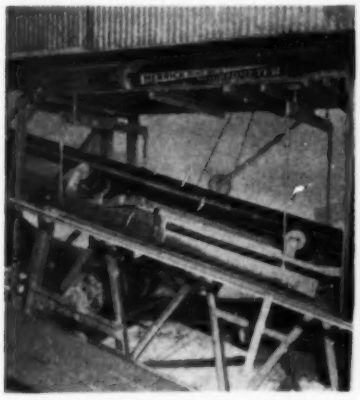
This 36- by 30-in. pulverizer, driven by a 150 hp. electric motor, is used for agstone production.

To supplement the production of agstone obtained from the secondary and tertiary crushing units, the Mitchell firm uses a Jeffrey 36- by 30-in. pulverizer, which is V-belt driven by a 150 hp. Century motor. The unit is fed ½-in. stone and/or ⅜-in. chips obtained from bin storage via a 30-in. by 95-ft. belt conveyor. The hammermill product is then discharged to the same delivery belt issuing from the short head cone crushers, after which it is sized on the 2-deck screen mentioned earlier. Because this screen handles the pulverizer product, the agstone is necessarily finer than that produced on the other finish screens. Production of this finer grade agstone amounts to about 25 t.p.h.

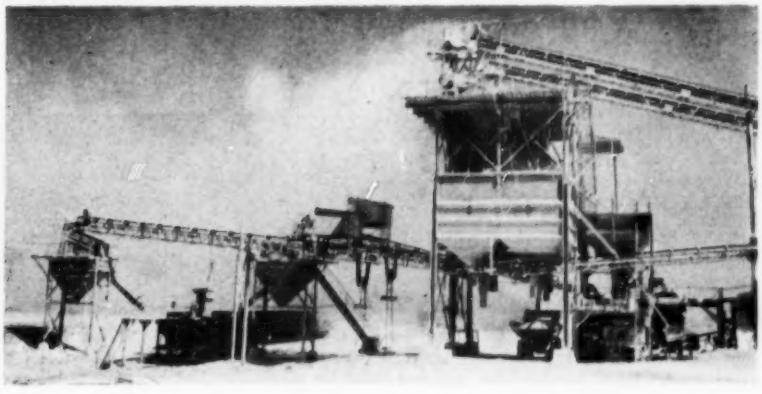
To add to the extreme flexibility of the plant's flow sheet, provision

(*Continued on page* 106)

Closeup of one of the three belt conveyor weighing devices, which are used for preliminary weighing of stone being loaded into rail cars.



View of the finish screening department and truck and rail-car loading-out bins. Each loading-out belt conveyor is equipped with an automatic weighing device and a 3- by 8-ft. screen. Conveyor on lower right leads to the pulverizer.



"Limey" appears on many of the Lee bags and newspaper advertisements.

It's in the BAG

By **NORMAN T. SIMPSON**
Norman Simpson Advertising
Lee, Mass.

THE man who said that if you build a better mousetrap, the world will beat a path to your door was only partially right. He should have added that unless you package, merchandise, promote, and advertise your mousetrap, all you will catch in it are your own mice. Mousetraps, mouthwash, or limestone, the proposition is the same—if you've got a good thing, put your best foot forward, and keep on going. Give your product the best possible package, explore every merchandising possibility, and tell your customers about it in such a way that they can't resist it. In this article we'll discuss the first step, the one that has to be right, in order to get the best result from the other two—packaging your lime or limestone products.

Let's assume at the start that the so-called "container" properties of your bag are satisfactory. It carries your product from the plant to the user, through various middlemen, without breaking. If it doesn't do this, all of the things that we're about to discuss will be so much wasted time. The sales psychology goes out the window when the limestone seeps out of a broken bag.

Is your bag an advertisement? Is it a salesman for you? Does it arouse a response and facilitate choice? Does it command attention, radiate confidence, tell the product story? Does it reflect the personal

In the kraft bag at the left the stylized treatment of the words "Stop Skid" and the name of the product leave no doubt as to the use of the contents. The white bag in the center, a three-color modern design for a lawn and garden product, tells a story of action and use. A pleasing picture of a cow on the third bag shows the satisfaction that the product brings.

Artist's sketches of Lee Lime bags. Top row, left: modern treatment, showing hands symbolic of the aid lime lends to growth; center: a design for a dual-purpose product for farm and building use; right: a bag design with animation and action, suggesting ease of handling. Bottom, left: another dual-purpose bag, in which design and color carry the ball, rather than the illustration; right: traditional approach, with the Indian carrying the principal burden of product identification. The effect of the side checks is readily seen in these sketches.

pride you have in your product? Does it *look* like a good value?

It should do all of these things, and more. Other packages for other products do them. Everything from toothpaste to chicken feed gets an extra sales lift from packages that result from co-ordinated, careful top-side planning. It is to be noted here that many of these products are as highly competitive and as low in profit as lime.

This is a good time to bring up those two points. Advertising men

The reverse side of the lawn and garden bag also helps to carry the main load of retail merchandising. Instructions are illustrated simply and amusingly. The total effect of this bag, back and front, combines action, animation, and amusement.

are shocked when they discover the cost of a ton of lime and the very small profit from a sale. They've also been surprised at how little attention has been paid to pre-selling and promotion in the lime business. In this discussion let's consider these two thoughts: (1) bag design can be the first step in a rising sales curve; (2) every advertising dollar spent on lime must do a full 100 cents worth —a good trick in these days.

If your lime products and your service are about on a par with your competitor's, then you both start off even. In this setup the answer to higher sales volume is found in all the varied facets of *salesmanship*.

You have one salesman who works day and night, 24 hours a day, 7 days a week, for all the weeks of every year—He's *your bag*. Is he working for or against you? He's seen on a truck, in the warehouse, on the dealer's floor, in the farmer's barn; he's even seen on the dump heap. He's seen by people who are subject to the same psychological forces that influence them to switch cigarette brands, try new shampoos, buy another razor blade, or sample a new after-shave lotion. He's seen by *customers*.

If he's seen by your competitor's customers, he ought to create a doubt in their mind as to whether they're getting top value for their money. If he's seen by your customers, he ought to re-affirm that faith that causes them to buy your product in the first place. Nothing makes a man feel better than to be re-assured that he is a shrewd judge of anything he has purchased.

Your bag is a big gun in your sales offense. The combination of the total effect of color, typography, illustration, copy, product identification, and trade mark can all work in your favor, winning acceptance for the name, product, and manufacturer.

Where do you start with the evaluation of your lime product bags? We suggest that you get one of every kind from the bagger, and take them home with you some evening. (We suggest home, because the following operation should be uninterrupted by telephones and office routine.) Lay all of the bags on the floor. Study each one, critically applying the questions asked earlier, and see for yourself how they measure up. Then look at the whole group. Do all of them look as if they are from the same plant? In the language of the package designer, do they all belong to the same family? Is there one easily recognizable feature common in all of them? Would you know they were your bags from a distance of 100 yards? Would everyone else say: "There's a Red Cliff Lime Company bag"?

We're beginning to see that if there were a formula to follow, as far as lime product bags are concerned, each bag would tell a different prod-

uct story, and sell it, and all the bags would sell manufacturer identity through family resemblance.

Let's first discuss the latter feature, manufacturer identity. In the case of the Lee Lime Corporation, "family resemblance", an easily recognizable feature which would be common in all bags was achieved through the use of side checks, as illustrated in this article. There is nothing original in the idea of these checks, but they happen to be the best answer for our purpose. Circles, oblongs, triangles, hexagons, octagons, wavy lines, stars—well, there are literally hundreds of identifying designs for the sides of your bags. We emphasize the sides because in a warehouse or on a truck or in a store the *sides* of the bags are usually what you see first if they're stacked flat; and it is important to be identified as quickly as possible.

Continue the search for other common denominators. How about your signature cut, the printing on the bag that gives your name and location? If it is not the same or close to the same on all bags, it should be.

There's another very interesting way to maintain immediate identification for your entire family of products. This should also tie in with your other advertising. A trade mark and/or a service mark can appear on each of your bags The Lee Lime Corporation has enjoyed identification with "Limey", who is also pictured in this article. This is not just a trade mark, but actually another salesman. (See p. 94.)

Family resemblances may be obtained by using a common color scheme, arrangement of text and illustrations, and type faces. Quicker identification can be gained by combining two or more of these elements.

To sum up the family resemblance story: It results in greater total advertising impact; each product gains prestige and sales momentum from the sale of others; and new products will reach a profit-producing level more quickly because an already-familiar pattern breaks down sales resistance.

Moving now from the question of family resemblance, which is told on all six surfaces of your bag, let's examine the product-story aspect, which is mostly told on the front, and may be considerably aided by the back of your bag.

One of the first steps in merchandising is to create a demand for your product. If your bag simply says, "Whoziz Lime", it won't create a demand for a thing. Even if it says: "Whoziz Spray Lime" or "Whoziz Agricultural Lime", it falls flat. However, if it is illustrated by something that is easily associated with the use of the product, and a descriptive adjective or two that has emotional appeal for the reader, we're off to a better start. The illustration should in some way depict the use of the lime product inside. From this point on the bag designer, of whom we shall speak later, carries the ball.

But let's return to the matter of changing your present bag designs. Even if you've always liked the picture of the farmer and his tractor doing what is presumed to be his Spring plowing, is that design crisp, contemporary, and attractive?

Some lime manufacturers are using bag designs that were originated 20 or 25 years ago. Even the farm machinery illustrated on these bags has been relegated to the junk heap long ago. Like everything else, bag designing techniques have improved. The muddy rows of green or black ink that are supposed to be plowed furrows can be replaced by a design far more contemporary. Even the type faces may need changing. Type that was the vogue when the original design was made, is now as dated as the old tractor in the picture. The colors, too, may need brightening or changing. Much has been learned in recent years about sales psychology and color. The colors on your bag may actually be repelling potential customers, instead of attracting them.

Let's turn our attention to the back of the bag for a few moments. Some lime men are missing out on a good sales bet by failing to buy back-printing. In carload lots, back-printing for single-color bags runs less than $1 per 1,000. For two-color printing, it's a little more, but it can make the difference between selling and not selling.

Instructions for use, explanations for new uses, selling messages about the quality and integrity of your product can all be printed on the back of the bag. "Limey" tells the story for the Lee Lime Corporation, and incidentally, appears in all of the newspaper and magazine ads for Lee Lime. Put the back of your bag to work. It's an inexpensive salesman, which can tell your story 120,000 times to the carload. (See p. 95.)

Before we leave the subject, it should be said that back-printing very frequently figures in whether or not valve-end printing may be obtained; some bag companies cannot print on the valve-end. Remember this: your name and product should be the easily identified by a potential customer, regardless of where he stands.

About this time in Operation Bag Evaluation, you may feel the need of expert, outside help, and this is the time to get it. It can come from two sources: (1) a professional package designer, who can take your entire problem and recommend changes and additions, or (2) the bag company.

Before we call in this outside help, let's think for just a moment about some of your experiences selling limestone products. Is this a familiar story? Farmer Jones needs 100 tons of limestone to raise his pH value to the point where he's getting the most from his soil. Farmer Jones says that 75 tons will do the trick just as well, so you sell him 75 tons, and say to yourself: "I'm in the business, but he won't pay any attention to me!"

Explain all the uses of your product to the designer, and then listen to him when he submits designs for your approval. It's a sad but true fact that plenty of clients pay no attention to experts who can help them a great deal. Here's what happens when this situation exists: The designer designs for your approval. He takes the easy way out because he knows from previous experience that no matter what he designs, you'll return to your own pre-conceived notions about the project. He won't use blue because you don't like it—and yet it may be just the color needed. He may know that a crisp, functional design will brighten up your bags and give them eye-appeal and sales impetus, but he'll go back to the farmer on the tractor because you've never accepted anything else!

Opening your mind to *all* of the possibilities of new designs is the first step in the process and a very important one. If your designer is completely briefed on the product, the market, and the uses, he should be able to justify any design that he submits.

Now a word of warning: bag companies will be glad to co-operate in re-designing your bags, but don't throw all of your problems at them at one time and expect new designs within two or three weeks. You have gone a long time with the present designs. Try to space your requests for new designs in such a way that the art and production departments of the bag company will be able to handle your requirements without rushing. Bag designing is a creative art. It is a careful, thoughtful procedure, and if the designers can work at their own speed without being under pressure, they will do a better job for you.

We've purposely stayed away from the over-technical aspects of lime bag designing, because we feel that each manufacturer will have an individual problem which can best be solved by his own designer. However, there are a few fundamental facts which may prove helpful when you are evaluating your present bags or considering new designs which may be submitted to you.

SIMPLE DESIGN—This applies to the front of your bag in particular. It should be an eye-catcher, not a catch-all for type matter and heavy illustration. It isn't mandatory to fill up the entire area with ink in one form or another. Trimming that frames the design and blotchy cloud and tree areas are to be avoided The best design is functional, clear, and uncluttered by foreground or background distractions.

COLOR—The color areas should be of a "poster" quality, that is, large and well-defined, rather than small and spotty. Very light colors should be bordered by darker colors. It should be borne in mind that the final printing is on a kraft bag, which contains dominant gray tones tending to take the sparkle out of yellows and light oranges. (Always insist on having new designs submitted on *kraft*, so that you'll get a true picture of the color values.) Overprinting is tricky. Never overprint the light color on the dark color; the result will be gray. Use caution in overprinting dark on light. Paste-ups of two colors will not show the effect of overprinting; so be certain that you get printed samples of the same two colors overprinted. In two-color bags, avoid the use of two colors that are similar. An example would be the use of blue and green. Similar colors, when used next to each other or overprinted, lose almost all of their individual value. Stick to contrasts.

TYPOGRAPHY — For display type, which gives the product name and use, sans serif or square serifs will do nicely. Good, crisp hand lettering will also be effective. Fancy types (open, outline, and shadow) should be viewed with skepticism. Intertwining tree branches, ornate scripts, and similar lettering have no place on limestone product bags. Very frequently the brand name is printed in outlined two-color type. In this case the lighter color is on the inside, bordered by the dark.

The reader type on the back of the bag should above all, be legible. Since it will be a larger type than newspaper or magazine faces, sans serif is a good selection.

ILLUSTRATION—Settle for a design that has zing! If there's action, it should be the sweeping type of action that is visible for a good distance. If it's an abstract design, ask for eye-arresting motion. If there are figures, demand animation. That doesn't necessarily mean a man hanging by the heels, but a figure that has credulity of motion, not a statue.

We've attempted in this discussion to encourage lime manufacturers to re-evaluate some of their valuable salesmen, their bags. We've also tried to make suggestions which would be broad enough to cover any operator in the lime or limestone products field. We have addressed the producers, who are entirely familiar with the balance sheet and with the influences that cause sales figures to rise, although they may not be conversant with the technical language of the bag designer or the bag maker. Remember this—if you're looking for more profits from more sales, they may be in the bag!

The Hercules Cement Corporation in 1953 increased its net income to $4.14 per share from $3.66 in 1952. Billings in 1953 were $8,555,494, up from $7,317,548 in 1952.

Basic Refractories Cited For Advertising Program

Basic Refractories, Incorporated, has been cited by the Freedoms Foundation at Valley Forge, Pa., to receive The George Washington Medal for its 1953 advertising campaign.

The citation considers the company's program, "an outstanding achievement in helping to bring about a better understanding of the American way of life during 1953". Presentation of the award will be made at a later date.

U.S. Boron Output in 1952 Declined from 1951 Level

The United States remained the world's largest producer of boron minerals, with all domestic production coming from California. After rising to a record level in 1951, sales of boron compounds by primary producers dropped sharply at the end of 1951, and total volume in 1952 was 583,828 short tons, valued at $14,105,000.

Five firms reported production of boron compounds from natural sources. American Potash and Chemical Corp., Los Angeles, Calif., recovered boron compounds from the brines of Searles Lake at Trona, Calif. Pacific Coast Borax Co., also of Los Angeles, mined kernite (hydrous sodium borate) from a bedded deposit at Boron in the Kramer District. A portion of this material was refined at the mine, and the remainder was refined at the firm's plant at Wilmington, Calif. A subsidiary of this firm, the United States Borax Co., produced colemanite (hydrous calcium borate) from a vein deposit near Shoshone, Calif. Westend Chemical Co., Oakland, Calif., recovered boron compounds from the brine of Searles Lake. Columbia-Southern Chemical Corp. produced borax in Inyo County, Calif.

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HOMER MAGNETIC PULLEYS AND PULLEY UNITS—
Available in standard diameters from 12" to 30"; belt widths 4" to 60". Special sizes upon order.

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Available in standard diameters from 12" to 30"; face widths 4" to 60". Can be furnished with or without enclosure.

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Available in standard widths from 4" to 26"; lengths and number of poles as required. Special fabrications to your specifications.

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By KENNETH A. GUTSCHICK

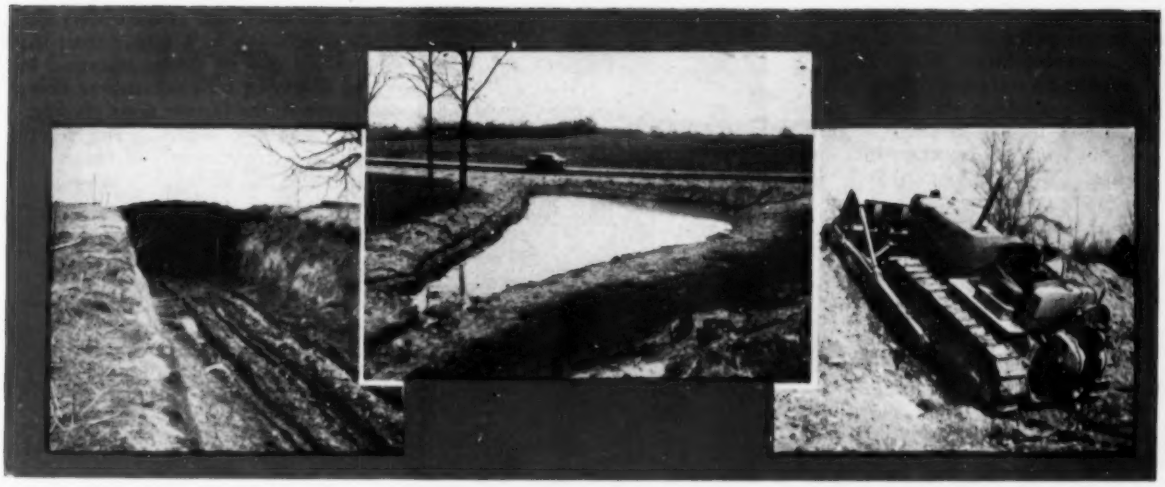
another ON THE SPOT report

A VITAL problem facing the agricultural limestone industry today concerns the relative ineffectiveness of the industry's merchandising job. This is evidenced by the fact that the annual agstone consumption of 28,000,000 tons is about one-third of the actual amount needed to bring the nation's cropland up to peak productive level. Recognizing this appalling fact, the industry has been devoting an increasing amount of time and effort to the problem, the result being the development of a variety of promotional aids such as billboard, radio, and newspaper advertising, and direct mail literature.

One of the newest approaches to the problem (and one with a great potentiality for the industry) has been inaugurated by Lynn Stewart, who is affiliated with the Meshberger Stone Company, Inc., Columbus, Ind. Through Mr. Stewart the quarrying firm, one of the more important crushed limestone and agstone producers in Indiana, offers a complete agricultural conservation service to the farmer. This arrangement includes not only the sale and custom spreading of agstone, but also the spreading of fertilizers and the providing of a number of permanent conservation practices such as land drainage, land clearance, terracing, stockpond building, and many others. Nearly all practices performed by the quarrying firm are subsidized under the federal Agricultural Conservation Program.

In carrying out this comprehensive program Mr. Stewart and his son Robert handle the complete sales end of the agstone and conservation business, while the Meshberger Stone Company produces the agstone and an affiliate construction company performs the actual conservation work. (Mr. Stewart also owns the farm land on which the quarry is being developed.) Under this arrangement the program has been highly successful, resulting in the

A general view of the Meshberger Stone Co., Inc., located near Columbus, Ind. Operating at 200 t.p.h., the plant produces a variety of crushed stone products, including agstone. The main screening plant is located on the left, the finish screening plant on the right.



This composite shows three of the permanent conservation practices performed by the quarrying firm. Left: a trench silo, used for hay storage and aging (this practice is not subsidized under the A.C.P.). Middle: a small pond for livestock, which was constructed with a bulldozer in a day's time. Right: a bulldozer in operation, working on a dam for a stockpond. The bulldozer is also used in land clearance and terracing.

mutual benefit of both the farmer and the quarrying firm.

This complete type of service is especially valuable to the farmer since it is based on the fact that soil conservation, which certainly is one of America's critical resource problems, involves the utilization of integrated, well-balanced conservation practices. The measures used in any one particular area are based upon such factors as degree of soil depletion, extent of erosion, climate, topography, and other interrelated factors. Thus the farmer is encouraged to improve his land not only by applying agstone and fertilizers but also by undertaking necessary permanent practices.

The benefit to the agstone producer, on the other hand, lies in the fact that the two types of conservation ("temporary" practices like agliming *vs.* "permanent" practices like terracing) in many respects actually complement each other. For example, a newly-cleared or a newly-drained field may require liming before it can produce efficiently. By offering a complete service, the quarrying firm can thus accommodate the farmer in both respects. Then, too, in performing a specific conservation practice, the company can test the farmer's soil on the site and immediately indicate whether

Lynn Stewart (right) and his son Robert examining a soil sample obtained with a soil auger. The Stewarts handle the sales end of the agstone and conservation business for the Meshberger firm.

This company-owned spreader truck, used for custom spreading of phosphate and other fertilizers, represents a valuable added service for the farmer.

A major conservation practice involves the ditching and tiling of poorly-drained farm land. This photo shows the ditching machine and tiling crew at work.

there is a need for liming. By selling one practice, the company is better able to sell its agstone. Furthermore, by providing a complete conservation service, the company shows its genuine interest in the farmer's overall problems, while it also helps him do a better job of production and increase his profits.

Initial phases of the permanent practices program were inaugurated by the Meshberger firm about five years ago, but it was not until 1953 that a full program got underway. The impetus at that time was the drastic change in the A.C.P. which substantially reduced the federal subsidy for agliming practices while simultaneously increasing the subsidy for permanent-type practices. The new government program called for one-third of the farmer's conservation allotment to be used on the permanent practices. Consequently, with the serious prospect of declining agstone sales, the company looked upon the conservation field as an excellent potential market. Furthermore, by providing a complete service, it was felt that the agstone business would actually not fall off. Moreover, the quarrying firm had already been operating a subsidiary construction and paving company, and therefore owned most of the heavy equipment needed for the conservation work.

COMPLETE CONSERVATION SERVICE

Agstone, Fertilizer Spreading The major service performed by the company involves the custom spreading of agstone, handled by a fleet of 18 agstone spreader trucks owned and operated by individual contract haulers. By being fairly evenly distributed over the area, the truckers (as a group) are able to serve and sell the entire area. Deliveries are primarily made within Bartholomew County (where the quarry is located), although portions of the six surrounding counties are included in the service area. Evidence of the major local interest in agliming is the fact that in 1952 Bartholomew County led all Indiana counties in agstone consumption per farm.

View of the 5- by 12-ft. 3-deck scalping screen.

As an added service, the company does custom spreading of rock phosphate, potash, and other high-priced fertilizers. For this operation, the company uses its own spreader truck —a New Leader (Highway Equipment Co.) twin-fan type of spreader mounted on an International truck. The fertilizer (bulk) is obtained directly from one of several southern Indiana fertilizer distributing plants; it is not stockpiled at the quarry site. By purchasing bulk rather than bag fertilizer and by having it spread by the quarrying firm rather than doing it himself, the farmer saves considerable time and money. This added service is consequently of major importance.

In addition, free soil tests (for pH level) are made out in the field. If a farmer wants a complete soil analysis, the company collects the soil sample and turns it over to the county agent for testing.

Permanent Practices The following is a list of authorized A.C.P. practices offered by the Meshberger firm to the farmer:

1. Tile drainage
2. Outlet ditches for removal of collected water
3. Field ditches for surface water removal
4. Field ditches for water table control
5. Constructing outlets for water channels
6. Dams for livestock water
7. Reservoirs for livestock water
8. Land clearance
9. Stream bank protection
10. Diversion terraces
11. Terrace outlets or sod waterways
12. Establishing or improving permanent pasture land
13. Constructing wells for livestock water.

In addition, the company performs several other services which are not subsidized under the A.C.P. One example is the construction of trench silos used for storage and aging of fodder crops (see photo); another is fence row clearance, necessitated by wild vegetation along fences encroaching upon valuable cropland; clearing the underbrush makes additional land available for crops.

According to Mr. Stewart, tile drainage, stock pond building, and land clearance are the three main conservation practices (in order of importance) being carried on by the company at the present time. Emphasis on pond building is closely related to the sparse rainfall in recent years. There is not much demand for terracing, mainly because the farming area served by the quarry firm is not exceptionally hilly.

The tiling operation is handled by a crew of three or four men, plus a civil engineer who plans the project and oversees the operation. The engineer provides the tiling crew with both a plan view and a cross-sectional view of the project; he also stakes out the course of the proposed ditch

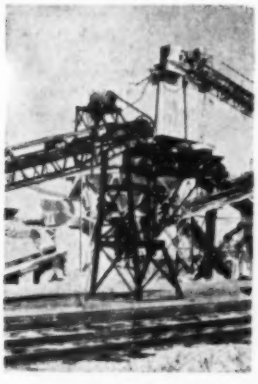
View of a miniature farm exhibited at one of the county fairs. The county fair is considered to be one of the best places to advertise and promote the company's product and services.

"you can't beat... LIPPMANN AG-LIME EQUIPMENT!"

Above, a LIPPMANN conveyor now in use at the Francesville Stone Company in northern Indiana. Mr. R. E. Ward, heading this successful aggregate operation, wrote the headline for this ad himself, and went on to say:

"We've Used Lippmann Since 1946!"

LIPPMANN CAR LOADER
Swivels in all directions! Most efficient loading method in all the industry!



"We have in operation, at the present time, 97% of the original equipment and that has been operating at 99% efficiency since installed." *That's a direct quote from one of the foremost aggregate producers in Indiana—a man who knows what to expect from Lippmann Engineered equipment!* At Mr. Ward's operation, Lippmann Roll Type Secondary Crushers are now economically producing 40 to 50 tons of AAA agricultural lime per hour; Lippmann Belt Conveyors, after more than 7 years of continuous service, still hustle these tremendous loads along with practically NO maintenance. *That* kind of service means PROFIT, and in the aggregate industry, *LIPPMANN profit* leads the pack . . . confirming Mr. Ward's statements, as well as the statements of many others who consistently praise the performance of Lippmann Jaw Crushers, Pulverizers, Screens, and washing plants the world over. You too can "Look To Lippmann" for those extras in quality that spell more production and lower costs., See your Lippmann dealer or contact Lippmann Engineering Works, 4607 W. Mitchell St., Milwaukee 14, Wis.

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and determines the depth and slope of the tile. The operating crew consists of the ditching machine operator, the tile setter, and one or two laborers who handle the tile and backfill the ditch. On some jobs the farmer does the backfilling.

The company owns two ditch digging machines, including a Parsons and a Cleveland No. 110 model. The former machine is used for 4-in. drain tile and for water pipe; the latter accommodates 6-, 8-, and 10-in. drain tile. The Cleveland machine can cut a trench up to 18 in. wide and 5 ft. deep.

Meshberger takes on all types of tiling jobs, ranging from the simplest single line requiring about a day's work to complete to the complicated multi-branched lines requiring more than a week's time. One job in particular involved the laying of over 2 miles of drain tile. The cost of the tiling operation is based on the depth and length of the ditch (amount of soil excavated) and the size of the clay tile. In many cases the farmer supplies the tile.

Stockpond building and land clearance projects are generally handled with bulldozers. Small ponds can be excavated in a day's time and cost as little as $75. Larger ponds, costing from $200-$500, require several days to complete.

To carry out the various conservation practices, the Meshberger firm uses the following heavy equipment: Caterpillar D4, D6, and D7 tractor-bulldozers; International TD-9 tractor-bulldozer; Allis-Chalmers HD-5 tractor with front-end loader; Case tractor with front-end loader; two Caterpillar No. 112 graders; Caterpillar No. 60 and No. 70 scrapers; two lowboys; and the two trenchers mentioned earlier. The two scrapers are used in conjunction with the D6 and D7 bulldozers.

ADVERTISING - PROMOTION

Besides pioneering the complete conservation practices, Lynn Stewart and the Meshberger firm are progressive in their advertising and promotional work. To foster this phase of the business, both Mr. Stewart and his son are very active in local farming affairs.

The company annually maintains a booth at four county fairs; and according to Mr. Stewart, the county fair represents the best means for sales promotion, since the company can effectively advertise its products. Also there is excellent opportunity to meet and discuss problems with prospective agstone customers. In addition, the county fairs are held during mid-summer, which is the beginning of the main agstone season (generally during the time of the winter wheat and sweet corn harvest, after which these harvested fields are limed). One year the company rented a booth at the state fair, but the affair lacked the local touch and consequently was not too effective.

Various kinds of exhibits are used from year to year. One of the most effective of these featured a miniature farm set up on a table, circled by an electric train. This "moving" exhibit attracted many spectators. In another exhibit, the company displayed samples of high-calcium and high-magnesium agstone, as well as the variety of crushed stone sizes sold by the quarrying firm; this exhibit was set up on a revolving table. Graphs and poster illustrations are also used; one graph illustrated the relatively slight increase in the cost of agstone over the last 20 years, compared to high increase in other farm expenditures. Another popular feature is the company's display of color photos of customers' farms. The company also holds a guessing contest at every fair, the winner being awarded a load of agstone (delivered), or a cash prize; in one contest the weight of a limestone boulder had to be guessed, in another the number of corn grains in a bottle, etc.

Besides participating in county fairs, the company frequently uses newspaper advertising, particularly during the liming season, for which cuts prepared by the N.A.L.I. are utilized. Radio and TV advertising are seldom employed, mainly because of the relatively high cost. Direct mail is used to a limited extent; the most recent mailer (a postcard) described the variety of services offered by the company.

The Stewarts actively participate in several local farmer organizations. Lynn Stewart is a member of the board of directors of the Farmers' Cooperative. Robert is president of the Bartholomew County Rural Youth Club, sponsored by the American Farm Bureau, and a member of the board of directors of the Bartholomew County farm bureau. They are both members of the American Farm Bureau and the National Grange, and they actively support the farm bureau organizations on the township level. Robert attends about five monthly township meetings of each of the 13 townships in the county; there he operates a movie projector, showing various farm bureau movies. By being very active on a local level, the Stewarts are able to maintain close contact with the entire farming population.

QUARRYING OPERATION

Located 2 miles northeast of Elizabethtown, the quarry penetrates a series of relatively high-purity Devonian limestones and dolomites. The quarry is being developed in three 30-ft. operating levels—the top two

Worker testing crushed stone sample for size gradation on an electrically-operated testing screen; note automatic timer on right.

Well drill bits are heated on this oil-fired forge preparatory for rapid sharpening on the automatic bit dressing machine located to the right.

SMOOTH SCREENING CALLS FOR SECO VIBRATING SCREENS

Photographed on the job, Minerals Service, Inc., Windsor Locks, Conn.

And Smooth Screening Pays Off in Better Sizing and Less Maintenance

Talk with operators about vibrating screen requirements and one thing seems to stand out every time: to be a *good performer* . . . a vibrating screen must be a *smooth performer!*

It's simply common sense . . . you want accurate sizing . . . you want maximum tonnages . . . and you want trouble-free performance . . . especially during peak production season.

Talk with operators who have SECO screens on their jobs . . . you'll learn why you'll be money ahead with smooth operating SECO vibrating screens on your job. What's the secret? Fully-controlled true circular action . . . and *only* SECO has it . . . thanks to the patented equalizer assembly.

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

SMOOTH OPERATING SECOS FOR EVERY SCREENING JOB

Whatever your screening requirements, we welcome your inquiry.

Over 300 models in single, double, triple and 3½ decks. Send for Catalog No. 203.

SCREEN EQUIPMENT CO., INC.
BUFFALO 25, N. Y.

consisting of the Beechwood limestone (3.5 ft. thick)and the Jeffersonville limestone and the bottom one of the Geneva dolomite. The latter is buff to chocolate-brown in color, thin to massive bedded, fine-grained, and hard; masses of calcite crystals are common. The Geneva fm. is excellent for both agstone ($CaCO_3$ equivalent exceeding 103) and for concrete aggregates. The two uppermost limestone formations are gray to tan in color, predominantly dolomitic, thin to massive bedded; and they are used for all purposes except concrete. Their $CaCO_3$ equivalent varies from 98 to 101. Because of the variations in the color and $CaCO_3$ equivalent of the Jeffersonville and Geneva formations, the company markets the agstone separately; the high-magnesium stone is slightly preferred.

The quarry sump hole penetrates the upper 10 feet of the Laurel limestone (Silurian age), which is a gray, thin-bedded, crystalline dolomitic limestone; this limestone may be quarried in the future. The sump hole is drained by a newly-purchased portable Allis-Chalmers 6- by 8-in. centrifugal pump driven by a Cummins 75-hp. diesel engine; a Gorman-Rupp 4-in. electric pump is also used.

Overburden consists of about 8 ft. of clay soil resting on a thin layer of New Albany shale which occupies pockets on the irregular erosion surface characteristic of the top of the Beechwood limestone. The overburden is removed by means of Caterpillar scrapers and a Lorain shovel loading into Euclid trucks.

Primary blast holes (6-in. diameter) are drilled with two gasoline-powered Bucyrus-Erie W-33 well drills, using a 14- by 18-ft. spacing pattern. Single row shots, ranging from 4 to 20 holes, are set off at a time; both Trojan and Du Pont explosives are used. Quarrying loading is handled by two diesel shovels—one a Lorain 80, equipped with a 1¾-cu. yd. Amsco bucket and the other a Lorain 75, equipped with a 1¼-cu. yd. Amsco bucket. Three Euclid 27 FD end-dump trucks are used on quarry haulage, handling about 15 tons per load.

The crushed stone plant is equipped to produce a wide range of specification aggregates and agstone. Major pieces of equipment include a Pioneer 3042 primary jaw crusher, an Allis-Chalmers 16-in. secondary gyratory crusher, two Pioneer 2240 double-roll crushers, an Allis-Chalmers 424 Pulverator, a Deister 5- by 12-ft. 3-deck scalping screen, three Allis-Chalmers Low-Head 4- by 12-ft. finish screens (including one 2-deck and two 3-deck), and Pioneer conveyors. All of the plant equipment, with the exception of the four crushers and the hammermill, is electrically operated; the crushers are driven by individual Caterpillar or Cummins diesel engines. Each crusher is fed by means of a Jeffrey-Traylor electric vibrating feeder.

R. W. Studler, superintendent; Roger Meshberger, treasurer; and Leon Meshberger, vice-president, inspecting the primary crusher. Note heavy chains used to contain load over feeder.

The stone plant is divided into a main screening section and a finish-screening section, the latter containing the two Allis-Chalmers 3-deck screens and one of the roll crushers.

Quarry-run stone is dumped into a 40-ton all-welded steel hopper mounted over a 5- by 11-ft. vibrating feeder; the hopper is embedded in concrete to insure stability. The feed into the Pioneer primary jaw crusher is controlled by means of heavy ship anchor chains (see photo). The crusher product is then carried on a Pioneer 30-in. by 137-ft. belt conveyor to the Deister 3-deck scalping screen; this unit is an end-tension type of screen, having a crowned deck. The oversize is chuted to a surge bin ahead of the gyratory crusher, the remainder going to bin storage as finished products, or to the surge bin ahead of the double-roll crusher. The latter, fitted with a smooth rotor and a corrugated rotor, is operated in closed circuit with the scalping screen, the return being effected by a 24-in. belt conveyor.

The Allis-Chalmers Pulverator, located in the main screening plant, is operated in closed circuit with the Allis-Chalmers 4- by 12-ft., 2-deck screen. This same screen also handles material from the second roll crusher, which is located in the finish screening plant; both crushers discharge to an 18-in. return belt conveyor leading to the screen. Products from this screen are then chuted to bin storage.

Crusher run material from the gyratory crusher and also material through the bottom deck of the scalping screen are chuted to a surge bin in the main plant; from this point a Pioneer 24-in. by 125-ft. belt conveyor fed by a Jeffrey-Traylor vibrating feeder transfers the material to the finish-screening plant. There the two 4- by 12-ft., 3-deck screens operate in circuit, producing several finished products plus the oversize, which is further reduced on the double-roll crusher. The second of the two screens is operated wet, the waste water being piped to a series of settling ponds.

Agstone is produced on all four screens in the plant, passing 4-mesh on the three dry screens and 3/32-in. on the wet screen. The Pulverator and the second roll crusher (fitted with smooth rotors) produce the bulk of the agstone.

The company maintains a fleet of 15 dump trucks which are used for stone deliveries; two of the fleet also are used for stockpiling. Loading from stockpile is handled by two Haiss loaders (75W and 77W) and a Lorain 60 crane-shovel.

The company has recently added a large concrete block garage and machine shop which is well-equipped to handle most repair work. In addition, the company has a new blacksmith shop, furnished with an oil-fired forge and a Bucyrus-Erie No. 8-BD well drill bit dressing machine. Worn drill bits are heated in about 20 minutes and shaped in only a few minutes; this greatly reduces the time and effort involved with the older coal-fired forge and sledge-hammering technique. The firm also has a small testing laboratory; sieve analyses are made with an electrically-operated Tyler screen, which is controlled automatically from a timer.

Harry Meshberger, a veteran of the quarrying industry in Indiana, is president of the firm. His two sons, Leon and Roger, are vice-president and treasurer, respectively. Herman Neuen is secretary, and Robert W. Studler is superintendent. As mentioned earlier, Lynn and Robert Stewart handle the sales end of the conservation business. The company also operates an affiliate construction and paving company, which works on projects throughout the state. Jack Olsen is the civil engineer handling both tiling and construction projects. The quarry produces 150 to 300,000 tons annually, about 20 to 25 percent of which is agstone. The company is a member of both the N.C.S.A. and the Indiana Mineral Aggregates Association. Lynn Stewart is a member of the N.A.L.I.

High Production and Lower Maintenance–

You Get BOTH with "Eucs"

Built for tough off-the-highway service, Rear-Dump Euclids have increased production and reduced hauling costs on scores of open pit mining and quarry operations. Ability to deliver "plus" performance year in and year out has made "Eucs" the accepted standard for comparison . . . here are some of the reasons why:

RUGGED SIMPLICITY

Designed and built for long life and low maintenance cost. All of Euclid's experience and facilities are devoted to specialized off-the-highway earth moving equipment.

CAPACITY

Euclids have payload capacities of 10, 15, 22, 34 and 50 tons. Because they are matched to various sizes of loading and crushing equipment, "Eucs" provide a well balanced operation for open pit haulage and increase the efficiency of the loading unit.

POWER AND SPEED

Powered by diesel engines of 125 to 600 h.p. "Eucs" have top speeds with full payload, up to 36 m.p.h. Five and ten speed transmission, or torque converter with semi-automatic transmission available. The favorable ratio of horsepower to payload means more pay tons hauled every trip.

VERSATILITY

"Eucs" are efficient for moving any material on any length of haul; handle overburden, rock, coal, ore and other materials loaded by shovels, draglines, transfer hoppers and mobile loading equipment.

If you are interested in higher production at lower cost, have your nearby Euclid Distributor show you what "Eucs" are doing on work similar to yours. He'll be glad to make a hauling cost estimate for your job—no obligation, of course.

EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

GM GENERAL MOTORS

Indiana Quarry

(From page 93)

was made for recircuiting material from the stockpiles. This material is dumped by truck into an underroad hopper and then fed via a short 30-in. conveyor belt to the 126-ft. long delivery conveyor issuing from the cone crushers.

For rail car loading, two spur tracks and three belt conveyors are utilized; this permits the simultaneous loading of three rail cars. Two of the loading-out belt conveyors issue from the storage bins. A third serves a stockpile beside the track; it issues from an underroad hopper.

One of the interesting features of the car-loading operation involves the use of Merrick type E Weightometers mounted on the loading-out conveyors; one scale serves each conveyor. Used for preliminary weighing in the place of a track scale, these automatically-operated scales prevent guessing on the part of the car loader and thus eliminate either overloading or underloading. The final weighing operation is then made by the railroad company at its yard in nearby Washington, Ind.

Also in circuit with each of two of the loading-out conveyors is a Lippmann 3- by 8-ft. double-deck screen used as a final sizing unit.

Stockpiling is handled by the two Euclid trucks mentioned earlier and a Koehring Dumptor. A Lima No. 34 crane and Nelson and Haiss loaders are used for truck loading from stockpiles. The firm also operates a second Lorain 820 shovel, which is used predominantly for stockpiling; earlier it had been used for quarry loading along with the other 2-cu. yd. shovel. Other mobile equipment in service at the Mitchell quarry includes Caterpillar D-6 and D-8 tractor bulldozers, an Allis-Chalmers HD-5 tractor, and a John Deere "O" tractor. The HD-5 machine is used primarily for moving rail cars, the latter for road maintenance.

The machine shop and garage is one of the largest, best equipped shops in the industry. It is large enough so that repair work on several major pieces of equipment, including the shovels, can be carried on simultaneously. Major shop equipment includes four 1- and 2-ton hoists, a grinder, a drill press, a Hobart 400 amp. welder, a power saw, a bearing puller, a brake machine, a hydraulic press, a Jenny steam cleaner, and other essential apparatus. For the testing of crushed stone samples, the company uses a Gilson testing shaker screen.

Shipping A breakdown of stone shipments indicates that about 75 percent of the plant's total output is shipped by rail, the remainder by truck. Rail shipments are largely confined to the west and south of the plant, extending to the maximum of about 125 miles. Thus southwestern Indiana and southeastern Illinois are served by rail. Truck shipments are generally within a 20-mile radius of the quarry; however, the service area (particularly for agstone) is lengthened considerably to the west, paralleling the lack of agstone sources in far western Indiana.

In charge of the Mitchell operation is Clete A. Broecker, general manager and vice-president. Mr. Broecker is also in charge of the Newton County Stone Co., Kentland, Ind., another Ralph-Rogers affiliate. Other officers are Ralph Rogers, president; Harry L. Berry, vice-president; and Wayne K. Sowers, secretary-treasurer. Rayburn Wedgewood is the superintendent; Kenny Purett is the plant foreman; R. W. Tomlinson is the office manager; and J. Howard Telfer and John A. Ward handle sales and promotion. About 35 men are employed.

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HIGH PRODUCTION

Aggregates and Agricultural Limestone

STATIONARY or MOBILE CRUSHING PLANTS

GRUENDLER LARGE CAPACITY HAMMERMILLS on the job throughout the United States-Europe-Asia-Latin America

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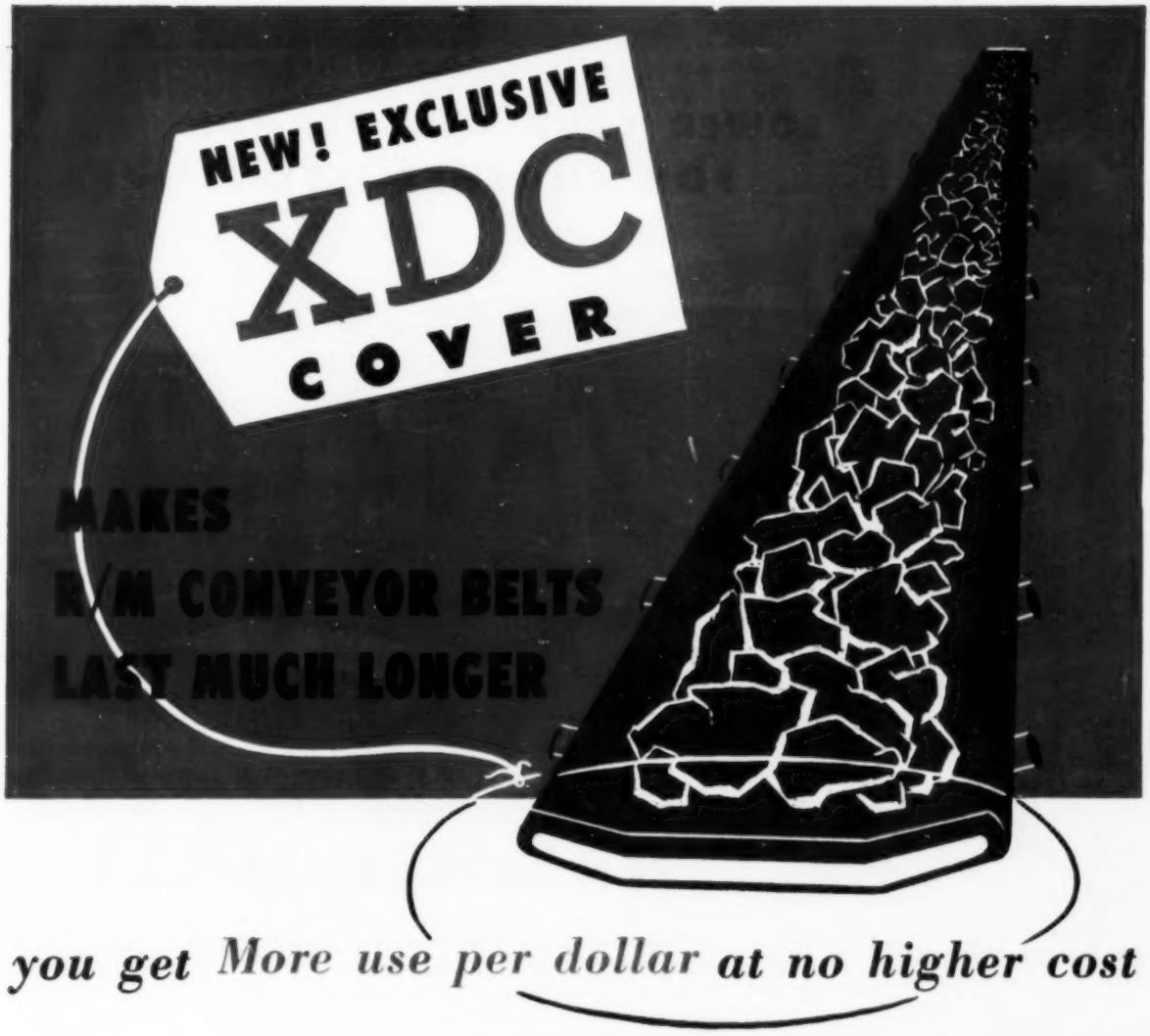

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LOWER YOUR COST-PER-TON FOR CRUSHED STONE!

WILLIAMS *Heavy Duty* HAMMER MILLS

With a Williams, you don't need a primary crusher and another two or more secondary grinders — because *a single Williams Hammer Mill does the complete job in one operation!*

That means no additional machines are necessary — no extra foundations, housing, conveyors, drives or other equipment — *a saving up to 75% on initial investment!* And because a Williams does the job faster and better, you can *cut your crushing costs up to 50%!*

There's a Williams to suit *your* specific need, no matter what it is! It will pay you to *get the facts now!*

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SUPER-SLUGGER	Crushes power-shovel-loaded stone to 1½", ¾" — even to 8 mesh — in one operation! Capacities up to 550 tons per hour.
SLUGGER	Reduces 100-pound stone to 1½", ¾" or agstone — in one operation! Capacities up to 100 tons per hour.
NF and GA TYPES	Reduce 4" stone to ½", agstone — or as fine as 20 mesh — in one operation! Capacities up to 200 tons per hour.

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—IMPACT and DRYER MILLS
—for fine grinding to 400 mesh or micron sizes

AIR SEPARATORS
— any type; for precision control and high production in fine grinding

VIBRATING SCREENS
— in any size for any job. 1 to 3 decks, open or enclosed.

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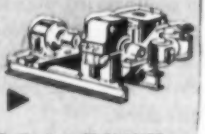
— for dust-free grinding, and for wet, sticky, greasy materials.



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Numerous Local Associations Serve Producers of Agricultural Limestone

By WILLIAM M. AVERY

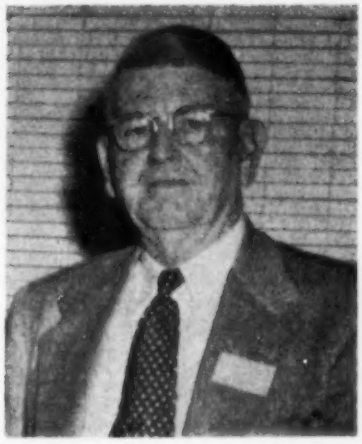
IN A relatively short span of years the production and marketing of agricultural limestone has grown from a somewhat precarious status as a stepchild of the crushed stone industry to an established position as a full-fledged and well-organized industry in its own right. National association activities, well publicized by the trade press, have undoubtedly been a decisive factor in the industry's development, but state and regional organizations have also rendered yeoman service to the cause.

Returns from a recent direct-mail survey conducted by PIT AND QUARRY indicate that there are today an even dozen organizations in existence which concentrate at least a portion of their efforts on local-level problems connected with the agstone industry. Since the exigencies of other travel commitments normally make it impossible for this publication's editors to attend the meetings of such local groups, our survey was conceived with the thought of gathering and reporting general information concerning the structure and program of each of the several associations. It is hoped that information of this type in published form will encourage the formation of similar groups in areas which are now unorganized.

INDIANA MINERAL AGGREGATES ASSN.

Agricultural limestone producers in the state of Indiana participate in the activities of the Indiana Mineral Aggregates Association, Inc., an organization formed, as the name would indicate, primarily to serve the interests of the crushed stone and sand and gravel industries. The present name was adopted in 1934, when two older groups, the Indiana State Stone Club (formed in 1911) and the Indiana Sand & Gravel Producers Association (formed in 1913) merged to form a single association "with the broader objective", to quote the present engineer-director, "of seeking to enlarge the opportunities of producers to serve the people of Indiana by stimulating research into the development and use of all minerals from which aggregates are obtained, and the dissemination of reliable information concerning their mining and processing".

Directors of the Kentucky Crushed Stone Association were photographed at a recent meeting. Top row: Emil Berry; W. O. Snyder (executive secretary); R. S. Waters (secretary); and W. E. Covington. Bottom row: James B. Allen (president); J. Robert Thompson, David Bassett, and Herman Genet.



Clint A. Allen, who has been executive secretary - treasurer of the Iowa Agricultural Limestone Association since its founding in November, 1945.

Approximately 80 firms comprise the association's present active membership. Headquarters are in the Roosevelt Building in Indianapolis. Ralph E. Simpson is full-time engineer-director of the organization. Currently Glenn W. Bowen is president, George Wheeler is vice-president, and M. R. Johnson is secretary-treasurer.

IOWA AGRICULTURAL LIMESTONE ASSN.

The Iowa Agricultural Limestone Association was formed by a group of agstone producers who met in Des Moines in November, 1945. Its purpose, as stated in the bylaws, was "to promote and advance the general welfare of the agricultural limestone industry consistent with the public interest, and to perform all desirable and lawful functions necessary for the efficient construction and beneficial operation of the industry".

The group holds a well-attended meeting in Des Moines each year to plan future programs and discuss problems of immediate concern to the membership. The affairs of the association are managed by a 12-man board of directors and a full-time paid secretary. There are currently about 85 active producer-members and approximately 50 associate members.

In 1950 the Iowa group originated an outdoor billboard advertising program to promote a larger market for agstone. This outstanding successful gambit in the field of marketing has been carried on continuously since its introduction, and the designs are now widely used by members of the National Agricultural Limestone Institute, as well as by producers in the Iowa association. Each year a committee is appointed to formulate new designs, six of which are selected by the board of directors to comprise a series for the entire year.

In addition to its vigorous promotional program, the Iowa Association has well served the interests of its members along other lines. When an oppressive limestone law was under consideration by the Iowa State Legislature recently, prompt action by the association was responsible for modifications which prevented a number of small producers from being driven out of business.

Clint A. Allen has been executive secretary and treasurer of the Iowa group since the day it was formed. His

Officers, members, and guests of the Missouri Limestone Producers Association posed for this group picture at a recent meeting. Left to right: Jack Acuff (Missouri Highway Commission); H. C. Krause (director); Arthur R. Alvis (president); Ben P. Donnell; C. E. Thomson; Dr. E. L. Clark (state geologist); Joseph J. Griesemer (director); H. D. Rodgers and J. C. Harlin (both of the Missouri Highway Commission); Rex Whitton (Missouri Highway Department); Tom Collins; and Paul N. Doll (association manager).

office is in the Teachout Building in Des Moines. Officers for the current year are Melvin E. Raid, president, and Wood W. Weaver, vice-president.

KANSAS LIMESTONE PRODUCERS ASSN.

The Kansas Limestone Producers Association was formed at a meeting at Ottawa, Kans., in March, 1953, "to promote the sale of limestone products, maintain closer contacts with the state PMA, and work out problems that are common to all producers of limestone". In the absence of detailed information, it seems fair to assume that this relatively new organization may not have developed a specific program for promoting the sale of agricultural limestone, although its letterhead forthrightly calls limestone "the backbone of Kansas agriculture and industry".

Officers of the group at this writing are John H. Riddle, president; Marshall E. Carr, vice-president; and Robert F. Kellough, secretary-treasurer. Sixteen firms comprise the present membership, but plans are in the hopper to launch a vigorous drive for new members. New officers will be elected some time this month.

KENTUCKY CRUSHED STONE ASSN.

The Kentucky Crushed Stone Association was organized at Frankfort, Ky., in June, 1944, to serve the broad interests of the limestone industry in the state. As compared with the 10 firms which took part in the organization meeting, present producer membership now totals 37 concerns representing 60 quarries with a normal annual production of approximately 10,250,000 tons. There are also 10 associate members.

Officers for 1954 are James B. Allen, president; J. Robert Thompson, vice-president; R. S. Waters, secretary; and Margaret Smith, treasurer. W. O. Snyder is executive secretary, with offices in the New Capital Hotel, Frankfort.

MICHIGAN AGRICULTURAL LIMESTONE ASSN.

Probably the youngest organization serving the interests of agstone producers is the Michigan Agricultural Limestone Association, formed in December, 1953. In spite of this comparatively late start, there has been launched a vigorous program, including subsidized experiments in liming in co-operation with the soils department of Michigan State College. Representatives of the group have also had several discussions with the State A.S.C. Committee, concerning practices which are considered to be detrimental to both the farmer and the disributor of agstone.

Officers elected by the group at its organization meeting were B. G. Lindenfeld, president; Arthur Goff, vice-president; Ralph McCrea, secretary; and G. W. Croope, treasurer.

MIDWEST AGRICULTURAL LIMESTONE INSTITUTE

According to information furnished by its president, the Midwest Agricultural Limestone Institute appears to be the oldest agstone group still functioning under its original charter. It was founded in 1926, when the use of agstone was on very little more than an experimental footing.

Membership in the Midwest group is composed chiefly of the larger quarries with facilities for shipping by rail, although it is not limited to these. The plants of member firms can serve almost any area in Illinois, as well as large portions of Indiana, Kentucky, and Missouri.

The Institute has always placed particular emphasis on the maintenance of close relationships with the University of Illinois College of Agriculture, the U. S. Department of Agriculture, and the various state committees which have had the responsibility of directing federal programs involving agricultural limestone. It is also active in connection with proposed legislation affecting the limestone industry.

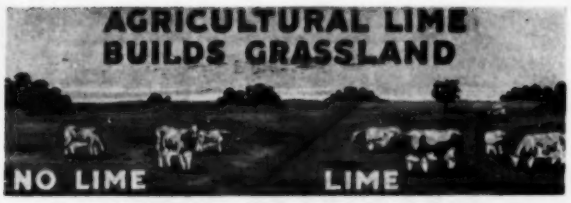
To obtain information upon which future promotion can be based, the organization has recently mailed out to dealers, distributors, and truckers a questionnaire concerning the present use, distribution, and demand for agstone.

Officers of the Institute for 1954 are A. E. Markgraf, president; W. E. Hewitt, vice-president; Paul Thesen, secretary; and James W. Erving, treasurer.

MINNESOTA AGRICULTURAL LIMESTONE PRODUCERS ASSN.

The Minnesota Agricultural Limestone Producers Association was organized in 1948 to help combat the

Roy C. Chapin Jr., The J. E. Baker Company, Millersville, Ohio, who is president of the Processed Limestone Association of Ohio. Other officers of this association include the following: Robert Hammatt (vice - president); Leo Fisher (treasurer); and Paul J. Andres (secretary).



The six billboard posters shown above were prepared by the Iowa Agricultural Limestone Association to be used by Iowa producers for a 12-month period. Each poster, which is used for a two-month period, has the producer's name at the bottom.

steady increase of soil acidity on the farmlands of the state. Although the present membership list comprises only 17 firms, all located in the southeastern corner of the state, these concerns are believed to account for a very large share of the total annual production of agstone.

The Minnesota group holds its annual meetings in the Spring, and these affairs generally attract an attendance of around 75. At the 1954 meeting held in Minneapolis in March the program included a report on the A.C.P. program by Robert M. Koch, executive secretary of the national association, as well as detailed discussions of the state program with local officials of the A.S.C.

The following new officers were elected at the Minneapolis meeting: Gene Muller, president; Wynn Bryan, vice-president; and Mrs. Mazie Patterson, secretary-treasurer.

MISSOURI LIMESTONE PRODUCERS ASSN.

Although the formation of a state agstone group was first discussed in 1945, the Missouri Limestone Producers Association was not actually incorporated until March, 1947. It had, however, something of a running start as a result of the employment as manager of Paul N. Doll, at that time in charge of agricultural industries, State Department of Resources and Development.

As stated in its articles of incorporation, the official purpose of the Missouri group is to provide for the education of those persons engaged in the production, sale, marketing, promotion, and delivery of limestone, in the best and most scientific methods of performing these functions; to provide users of limestone with accurate information on the most scientific utilization of the product; and to educate the general public in the use and benefits of limestone. The association's standing policy is to maintain a vigorous program aimed at the attainment of improved quality, accurate weights, and better service. A feature of its program is the publication of a monthly newsletter, which has done a great deal to establish the organization as a major source of reliable information concerning the limestone industry.

When the Missouri association was formed seven years ago, there were 17 producers on the membership roll. Today the list comprises about 85 concerns, which account for approximately three-fourths of the total agstone produced in the state. The present officers are Arthur Alvis, president; Albert Richardson, vice-president; and Roy E. Mayes, secretary-treasurer.

ASSOCIATED LIMESTONE PRODUCERS OF N.E.

The Associated Limestone Producers of the Northeast was organized in 1949 for the primary purpose of furthering the mutual interests of agricultural limestone producers in New England, New York, and New Jersey. Seventeen companies were represented at the organizational meeting. During the last year meetings were held with the U. S. Department of Agriculture officials in New York City; with Agricultural Stabilization and Conservation officials at Syracuse, New York; with the Agronomic Department of Cornell University at Ithaca, N. Y., and with the Grassland Conference at the University of Vermont in Burlington, Vt. In addition, the association arranged for newspaper releases and mats to be sent to all interested newspapers in the entire Northeastern area, each producer assuming the cost in his normal marketing area.

The growth of the association has been comparatively slow, but interest has been high, and the directors are planning a full program for 1954 with meetings at least once a month. The association also proposes to hold meetings this year with the state committees and their advisors in New Hampshire, New York, and Connecticut. In addition, it plans to hold a big summer meeting at the University of Massachusetts at Amherst, Mass., to get the latest slants on agronomic developments in the Bay State. Another project is to send, at association expense, the newspaper releases from the N.A.L.I. to the A.S.C. offices, the S.C.S. offices, and the county agent offices in all counties of the seven Northeastern states.

At the Northeast group's annual meeting in Albany last March the following officers were elected for 1954: P. D. Archibald, president; William Litteer, vice-president; and Edmund Clark, secretary-treasurer.

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The KVS Stone Preheater and Deheater on a ROTARY LIME KILN reduces operating and maintenance costs, increases production and improves quality.

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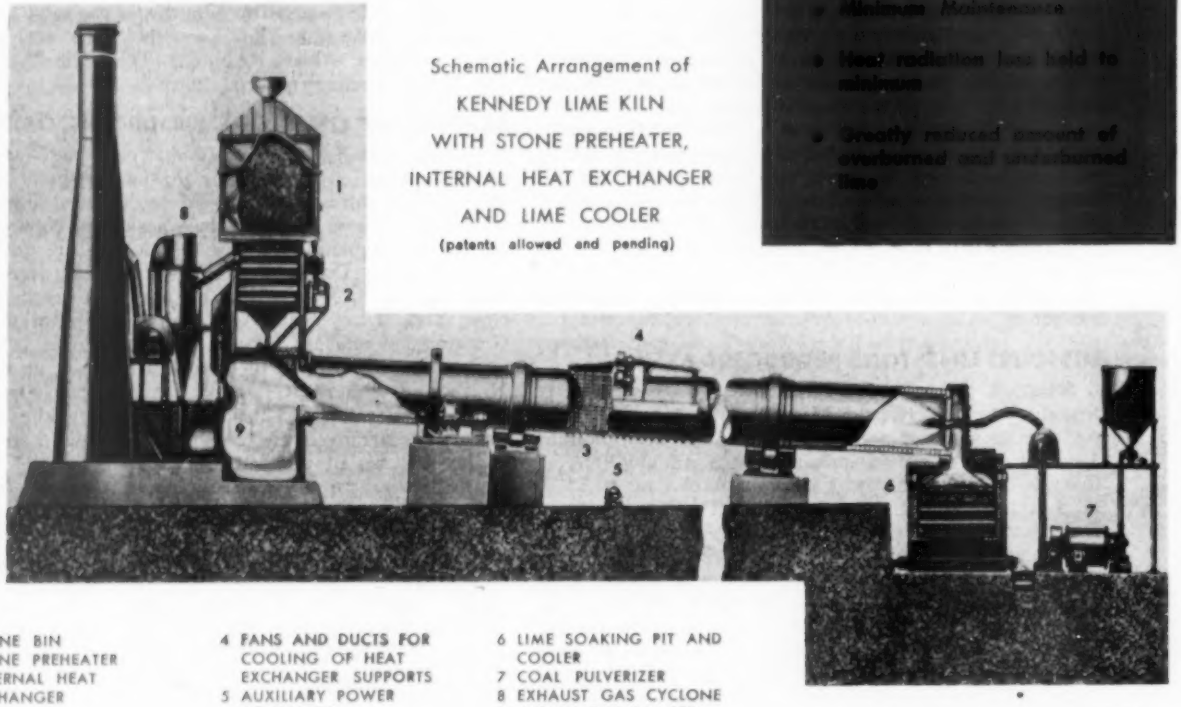

Schematic Arrangement of
KENNEDY LIME KILN
WITH STONE PREHEATER,
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AND LIME COOLER
(patents allowed and pending)

1 STONE BIN
2 STONE PREHEATER
3 INTERNAL HEAT EXCHANGER
4 FANS AND DUCTS FOR COOLING OF HEAT EXCHANGER SUPPORTS
5 AUXILIARY POWER GENERATOR
6 LIME SOAKING PIT AND COOLER
7 COAL PULVERIZER
8 EXHAUST GAS CYCLONE
9 BYPASS GAS DAMPER

FULL INFORMATION REGARDING KVS ROTARY KILNS AND THE NEW KVS HYDRATOR AVAILABLE ON REQUEST.

IT COSTS LESS.. TO OWN THE BEST!

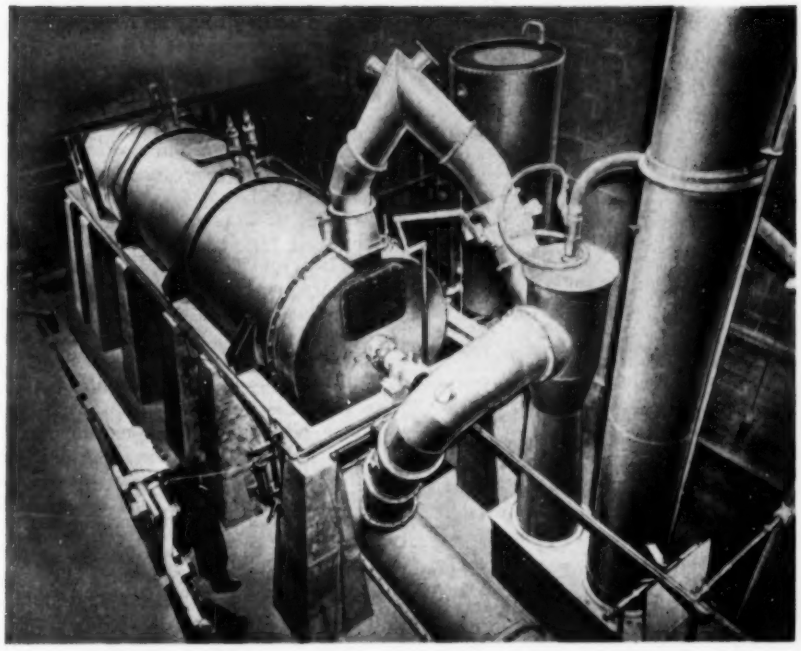
you these Advantages:

FOR A UNIFORM QUALITY PRODUCT

Control is fast becoming the most important factor in the production of high quality, uniform lime. Again Kennedy presents a revolutionary method of hydration and the equipment to handle the job!

The first installation, made in the plant of the Lee Lime Corporation, Lee, Mass., has far exceeded every guarantee and expectation. Figures, based on long continued and carefully checked production runs tell this story!

The following is a list of the properties of the lime produced during the above three states of production:



New Kennedy Non-Pressure Hydrator Installed at Lee Lime Corporation, Lee, Massachusetts.

	1875 to 1945 Stack Kilns and old type Hydrator	1945 to 1954 KENNEDY Rotary Kiln and old type Hydrator	1954 KENNEDY ROTARY KILN and KENNEDY NON-PRESSURE HYDRATOR
Ignition Loss	16%	21%	26%
Percentage of MgO Hydrated	App. 0%	50%	99%
Plasticity	App. 210	250	350
Water Retention	App. 50%	70%	92 to 95%

Two factors are responsible . . . Kennedy Rotary Kilns and the sensational KVS non-pressure Hydrator.

YOU can use equipment like this in your plant. Get the full facts from our Sales Engineering department.

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CHECK THESE 5 NEW WAYS TO CUT COSTS WITH

☐ **USE LESS LUBRICANT —**
One Ohio mill stamping manufacturer says: "We are using ⅓ less lubricant with PLASTILUBE than previously, thus cutting our costs and giving us the added protection we are looking for."

☐ **STOP NEEDLESS WEAR —**
A famous aircraft company did by using PLASTILUBE to retard spline wear on engines.

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A Minnesota flour mill boosted weekly production by 500 bags, found lubrication cycle stretched from every 3 hours to every 3 days!

☐ **SAVE MAN HOURS —**
Leading dock company now standardizes on PLASTILUBE because, "maintenance time is reduced 60% on most of our heavy loading and unloading equipment."

☐ **STRETCH EQUIPMENT LIFE —**
Intensive tests by one power plant proved PLASTILUBE lasts under high speed, climatic and moisture changes.

WARREN ENGINEERS WILL BE GLAD TO SHOW HOW PLASTILUBE CAN SAVE MEN, MONEY AND MATERIAL IN YOUR PLANT! Write PQ 1

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PROCESSED LIMESTONE ASSN. OF OHIO

The Processed Limestone Association of Ohio was incorporated in 1942 "to co-operate with agricultural colleges, experiment stations, county agents, consumers, manufacturers, and other agencies in promoting the welfare of the farming industry, and to place the agricultural limestone material industry upon a broad and sound basis as will best serve the interests of the public, raise the standards of quality, and increase the use of processed limestone products for agricultural purposes".

Starting with a membership roll of 10 concerns, this group has maintained a steady growth throughout the 12 years of its existence. There are at present 30 active members, compared with nearly 100 firms licensed to sell agricultural liming materials in the state. Plans for the current year include a vigorous effort to enroll new members.

The Ohio association holds monthly meetings, usually in Columbus. The group also takes an active part in sectional meetings throughout the state in conjunction with the fertilizer industry. Present officers are Roy Chapin Jr., president; Robert Hammett, vice-president; Leo Fisher, treasurer; and Paul J. Andres, secretary.

PENNSYLVANIA STONE PRODUCERS ASSN.

During the years when agricultural limestone was largely a by-product of crushed stone production, the problems of agstone producers in the state of Pennsylvania were usually taken care of by the Pennsylvania Stone Producers Association. As new operators entered the field whose sole interest was the production of pulverized limestone, it was gradually recognized that their problems were not by any means identical with problems of firms which were also engaged in producing aggregates and flux stone.

Accordingly in July, 1945, the Agricultural Limestone Division of the Pennsylvania Stone Producers Association was formed as a separate organization having its own officers, board of directors, and bylaws. The purposes of the division are to stimulate and advance the general welfare of the agricultural limestone industry throughout Pennsylvania. As a basic approach to this objective, the group carries on a vigorous and many-faceted educational program in co-operation with Pennsylvania State University. The organization also gathers and disseminates to its members a great deal of information on such subjects as federal and state legislation, methods of soil testing, and new methods of production and distribution. Another phase of the program is the promotion of various forms of advertising in farm papers, and the preparation of material for direct mail promotion campaigns. An important phase of the educational programs is the awarding of the annual scholarships to qualified students of agronomy in various institutions throughout the state.

The 1954 officers of this active organization are Leonard S. Fry, chairman; D. K. Shroyer, vice-chairman; H. M. Binkley, treasurer; and H. H. Wagner, secretary. Mr. Wagner is also general manager of the Pennsylvania Stone Producers Association. Both groups have their headquarters at 414 N. Third St., Harrisburg.

WISCONSIN AGLIME PRODUCERS ASSN.

Another newcomer to the list of state organizations is the Wisconsin Aglime Producers Association, which was organized at a meeting in Madison last November. The present 30-company membership is believed to comprise more than 90 percent of the major producers in the state.

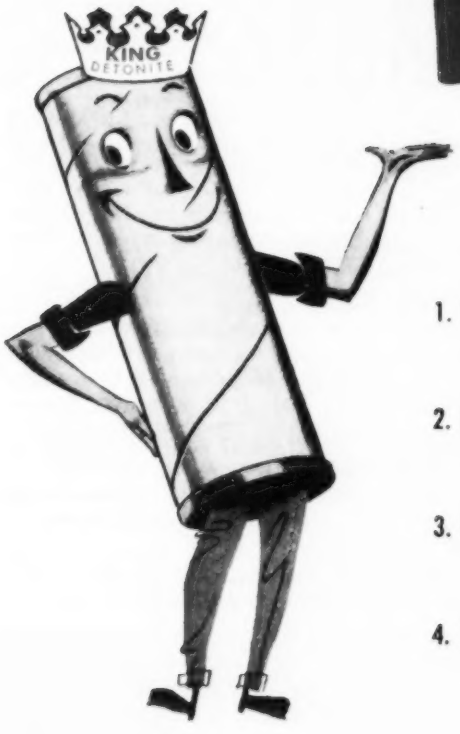
This new group plans a lively campaign to persuade members to develop and maintain vigorous advertising programs to bolster sales of agstone. One of its first official acts, carried out with the assistance of the national association, was a direct mail survey to determine how some 5,000 farmers felt toward the state program, as well as their attitude toward the continuation of the federal program. The organization's firm intention of cultivating good relationships with its farm customers is pointed up by its letter-head motto: "Support the farmer—He supports you".

The first slate of officers includes Loren D. Nellis, president; Stewart Watson, vice-president; Charles Coburn, secretary; and Ervin Ellefson, treasurer.

The production of roofing granules in 1952 as reported by producers to the U. S. Bureau of Mines, amounted to 1,619,195 short tons, valued at $26,122,857, an increase of 1 percent in quantity and 7 percent in value over 1951. The average value increased 87 cents a ton. Sales of natural granules have shown a marked downward trend during 1951 and 1952. 1952 sales declined 13% in quantity, 10% in value from 1951.

what a BLOW to your costs... when you use

KING DETONITE



Blasting is the key . . . blasting with King Detonite, and we'll prove it to you right in your own quarry. (See coupon below.) With Detonite blasting, you get important reductions in all these 4 major operating costs:

1. **BLASTING COST**— King Detonite's slow, heaving, spreading action lifts and fully displaces the burden, reducing secondary drilling and shooting to an absolute minimum.

2. **ROCK-HANDLING COST**— King Detonite breaks up rock into sizes that permit shovels to dig efficiently at all times, thus reducing handling costs.

3. **EQUIPMENT MAINTENANCE COST** — King Detonite's more uniform fragmentation means less wear and tear on expensive equipment . . . less cost for maintenance and replacement.

4. **PROCESSING COST**— King Detonite's more uniform fragmentation allows your crushers to operate at top capacity, thus lowering cost of processing the stone.

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PATENTED SURFACE-SENSITIZED EXPLOSIVE

Since 1878—Our 76th year

THE KING POWDER CO., INC.

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4 WAYS TO CUT COSTS

King Powder Co., Inc.
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Show me how Detonite will cut my costs 4 ways. Without obligation, have the King Representative get in touch with me to arrange for a Detonite demonstration right at our quarry.

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COMPANY _____

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or phone us collect

Weyerhaeuser Installs Second Kiln In Sulphate-Pulp Mill

By HARRY F. UTLEY

THE processing of wood pulp has long provided an important market for lime. While the pulp industry is still a relatively large purchaser of lime, in recent years it has turned quite definitely to the burning of waste sludges and spent process liquors to obtain the bulk of its needs, buying only enough stone and chemical-grade lime to make up for lack of quality in the recovered by-product.

Washington is one of the leading pulp-producing states. Its 28 or 30 pulp mills have a combined capacity of more than 6,000 tons per day. Of the various pulping processes the sulphate, or Kraft, method is the only one which uses lime, as such, in quantity. The lime is slaked and added to the cooking liquor; and while either quicklime or hydrate can be used, the former is generally preferred because of its relatively high CaO content. The minimum requirement is 90 percent CaO, with as little magnesia as possible.

On a 670-acre site along the Columbia River at Longview, Wash., the Weyerhaeuser Timber Company, a large-scale lumber producer for more than a half-century, operates one of the country's largest pulp mills. Pulping operations began here in 1931, when the first sulphite mill began producing. Present output is 300 tons of bleached sulphite pulp daily.

Five years ago the company erected its first sulphate (Kraft) mill on the property and in 1952 it doubled the producing facilities, primarily to supply about 240 tons daily of bleached Kraft stock for a new paperboard plant, also built on the premises at Longview.

Total pulp capacity is now about 900 tons per day—about 600 tons of sulphate and 300 tons of sulphite.

Sawmill wood waste provides the bulk of the wood chips for the pulp mills, any additional supply coming from chippers which utilize whole logs. The chips are transported to the pulp department *via* a long belt conveyor from the adjacent sawmills.

When the first Kraft mill was erected in 1948, a Traylor 7- by 250-ft. rotary kiln was installed to burn limestone and causticized white liquor residue. With the erection of the second Kraft mill in 1952, a new Traylor 8- by 240-ft. kiln was put in place to meet the lime demand, since about 500 lb. of lime is needed per ton of pulp produced. Both kilns are now in use and their operation is integrated.

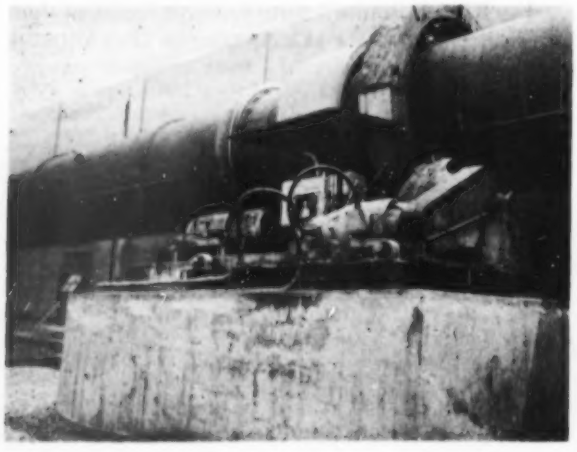
In the pulping process, raw green liquor is pumped to a 158,000-gal. storage tank. It is pumped from the tank to a Dorr green-liquor clarifier, and the dregs are drawn off and washed. The clear green liquor is pumped to the slaker classifier, where lime is added and the product is causticized. The resulting white liquor is drawn off for use in the pulp-cooking process, while the settled $CaCO_3$ mud is pumped to a 28- by 20-ft. Dorr lime-mud washer.

From the washer the slurry is first dewatered before it is fed to the kilns. An Oliver drum-filter continues to serve the old kiln for this purpose, while the new Traylor 8- by 240-ft. kiln is equipped with a Bird continuous centrifuge for dewatering the slurry to about 35-40 percent moisture. Feed to the new kiln is by a Traylor ferriswheel feeder. Both kilns are equipped with chain sections. Clean minus 1-in. limestone is added to the mud, the stone being shipped in by rail from Idaho. A Link-Belt elevator lifts it to the feed bin, and a Traylor table-feeder regulates the proportion of stone added to the slurry.

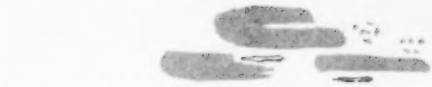
The new kiln is an all-welded unit and slopes ½ in. per ft. of length. It is driven by a G.E. 50-hp. motor through a Falk gear reducer with an International stand-by gasoline engine. Oil is used as fuel, atomized and blown by a Coen burner. The kiln is refractory-lined in the conventional manner.

Good instrumentation has been provided on the new kiln for the control of primary and secondary air, draft, feed rates, etc. Temperatures are sensed and controlled at critical points by thermocouples extending through the kiln shell and lining. Transmission of the readings is by fixed electrical conductors

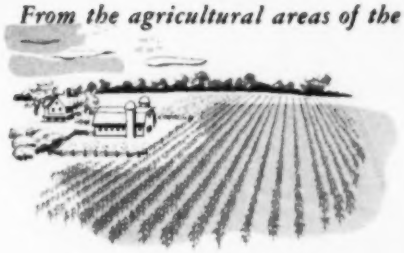
The drive on the new kiln at the Weyerhaeuser sulphate-pulp mill is a 50-hp. motor and gear reducer.



Outdoor installation of the new kiln, looking toward the firing end. The old kiln is housed in the building at the right.



From the agricultural areas of the nation...



to the sidewalks of every village, town and city . . .

LIMESTONE

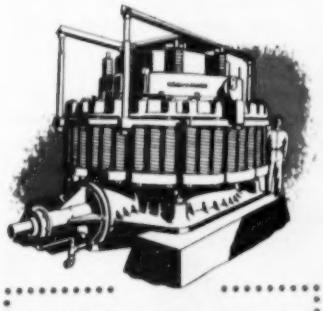
has paced the progress of AMERICA

★

In the great agricultural lands of America, limestone has long been recognized as an invaluable aid to raising better crops . . . as well as an important mineral supplement in poultry and animal feeding. In the building of the modern cities of today, limestone has paced America's progress by making possible better roads and streets, building stone, cement, steel for building and transportation, glass . . . and hundreds of other materials and products that are woven into the pattern of modern civilization.

With man's continual expansion of the number of uses of limestone, and ever-increasing refinements in specifications, the problem of rapidly furnishing properly sized stone to meet today's requirements has become more difficult. Symons® Cone Crushers have become the answer to scores of these problems, and as a result, hundreds of Symons Cone Crushers . . . in both Standard and Short Head types . . . have been installed by most of the leading producers of crushed limestone throughout the world.

Thus, in limestone operations . . . *as in all of the great ore and industrial mineral operations the world over* . . . SYMONS Cone Crushers are relied upon to efficiently produce great quantities of finely crushed product at low cost.



SYMONS Cone Crushers . . . *the machines that revolutionized crushing practice* . . . are built in Standard, Short Head, and Intermediate types, with crushing heads from 22 inches to 7 feet in diameter—in capacities from 6 to 900 tons per hour.

C353

NORDBERG MFG. CO., Milwaukee, Wisconsin

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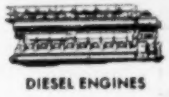
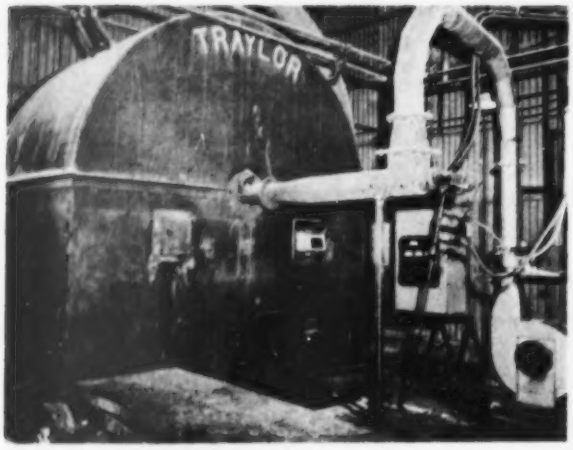
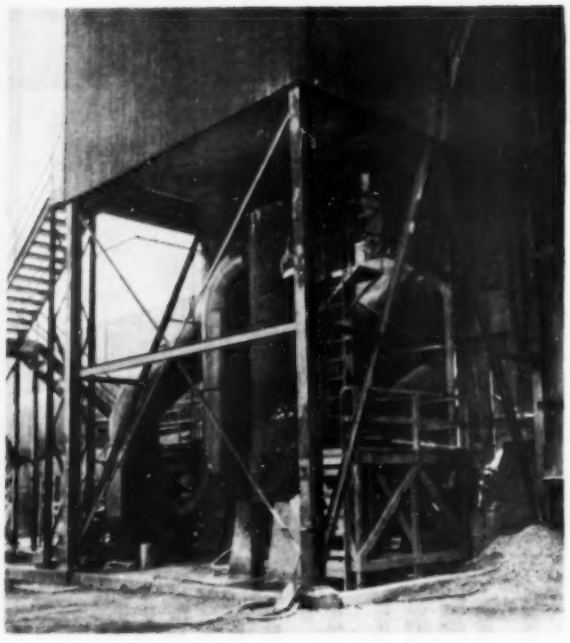
SYMONS VIBRATING BAR GRIZZLIES and SCREENS



DIESEL ENGINES



The oil burner, utilizing atomized oil, and the hood on the new kiln.

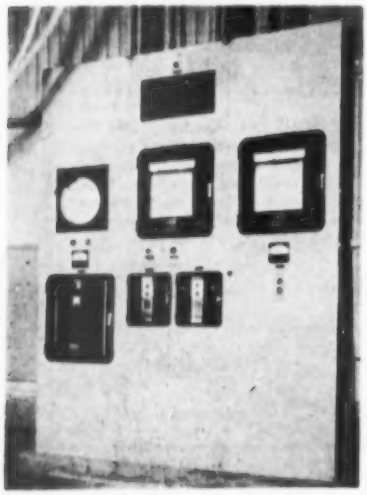


Right: The wet-scrubber dust-collecting installation on the kiln, from which cleaned gases are carried to a 100-ft. steel stack.

which run to a set of six trolley hoops around the kiln near the driving point, thence by conduit to the control board on the firing floor. Operation requires the minimum of attention, and excellent burning characteristics are maintained. Satisfaction with the equipment was tangibly expressed by the management recently when it ordered almost identical equipment for installation in its newest sulphate pulp mill now nearing completion at Everett, Wash., about 165 miles north of Longview.

The new kiln exhausts through a Peabody wet scrubber, the cleaned gases being carried by an induced-draft fan to a 100-ft. steel stack for release to the atmosphere.

Burned lime from the kiln goes to a 40-ton storage tank by way of a Link-Belt drag-chain conveyor and elevator. The Dorr slakers, utilizing green liquor, are fed with lime from this tank.



The instrument panel on the firing floor, where the recorders and controls are centralized.

Hoffman Construction Company, Portland, Oreg., had charge of the sulphate-mill expansion, including the erection of the new Traylor kiln. General supervision was under G. F. Alcorn, company construction engineer. Power is plant-generated; and the increased demand called for a doubling of generating capacity involving the installation of an additional 12,500-kw. G.E. turbo-generator. Columbia River water is used, now at the rate of 77,000,000 gal. per day, contrasted with a former 45,000,000 gal. Cochrane and Infilco equipment is employed to reduce turbidity and treat for alkalinity.

The Weyerhaeuser 430,000-acre tree farm is in the vicinity of St. Helens, Oreg., only 40 miles distant from the plant, strategically situated to assure an adequate supply of logs. A far-reaching program of re-seeding (Weyerhaeuser conceived the slogan "Timber is a Crop".) guarantees a future volume or timber sufficient to keep the Longview operations running for a long, long time. Currently 1,000,000 board feet of lumber is turned out daily at the Longview sawmills, plus pulp, paperboard, and plywood. Nothing is wasted at Longview, and the complex operations are integrated throughout by mechanized handling systems. Even the bark from the logs is used for fuel in the steam plant!

Raymond E. Baker is manager of the pulp-division operations at Longview. A. Hugh Wickett is superintendent of the Longview sulphate-pulp mills. Main offices of the company are in Tacoma, where Howard W. Morgan, general manager of all Weyerhaeuser pulp operations, makes his headquarters.

Record Sales Are Set in 1953 By Major Gypsum Producers

United States Gypsum Company has reported record sales in 1953, which sent the net income to $19,558,708 ($11.88 a share) as against $19,031,216 ($11.55 a share) in 1952. Net sales for 1953 amounted to $194,589,946, topping 1952 by 5.2 percent.

National Gypsum Company also set a new record for 1953 with $116,871,438 in sales, an increase of 18 percent over 1952, also a record year. Earnings for 1953 were $7,821,323 ($2.71 a share) compared with $7,249,480 ($2.84 a share) in 1952.

Minneapolis Perlite Co. Plans New Plant Addition

Western Mineral Products Company, Minneapolis, Minn., processors of perlite and vermiculite, are constructing a new two-story plant for processing perlite products, as announced by L. J. Venard, president.

The plant, designed by C. A. Pratt, the firm's vice-president in charge of engineering, will include modern processing equipment, storage bins for raw material and finished products, and railroad facilities. It will adjoin the company's present operation.

Illinois Producer of Fine Limestone Specialties Makes Two Grades of Agstone

IN ITS comparatively brief history—from 1946 to date—the Livingston Stone Company of Pontiac, Ill., has developed from a small producer of agstone and crushed stone into a manufacturer of a wide variety of highly-specialized fine limestone products. Some are used in chicken laying houses, others in Grade A barns for dairies, as asphalt fillers, and for a number of other purposes not divulged. Certain of these products are as fine as 200-mesh. The capacity of the entire operation is 100 t.p.h., most of it fine material. In 1953 the output was about 25,000 tons of road stone, 42,000 tons of agstone, and 12,000 tons of finely-pulverized special products. Most of the fine products are bagged, including specially-fine agstone which is sold to farmers outside the government support plan.

This company was started in 1946 by David J. Moran, president and general manager who had been a contractor in Chicago and later a producer of crushed stone in Rockford, Ill. Seeing the possibilities in this area, he looked around until he found a suitable deposit, which was thoroughly tested before it was leased. He started out with a portable plant, producing agstone and crushed stone; but as the demand increased, it was converted gradually to a permanent operation.

Early in 1950 the production of finely-pulverized specialties was begun, largely to fill in the gaps between seasons of demand for stone and agstone, thus making it possible to provide steady work for the employees the year around. The demand for these specialties grew steadily and now form a very important part of the business. Additional equipment was added from time to time to take care of these demands.

The deposit, located about 5 miles south of Pontiac, consists of 300 acres of high-calcium limestone ranging from 14 to 20 ft. in depth. The overburden is 2 to 3½ ft. in depth and is removed by an Allis-Chalmers tractor and bulldozer, a ¾-cu. yd. Northwest dragline, and a La Plante Choate scoop. Drilling is done with a Cleveland DR14 wagon drill which is supplied with air by a 315-c.f.m. compressor mounted on a Reo truck chassis. Dupont explosives and delay caps—instant and No. 1 and 2 delay

A general view of the Livingston Stone Company's plant at Pontiac, Ill. Plant and storage buildings are at the left; garage and shop at the right.

—are used. Loading is done by two Thew Lorain shovels—a Model 55 and a 75—into dump trucks which haul to the plant.

The trucks discharge the stone onto a reciprocating feeder ahead of the New Holland double-impeller primary crusher. This was originally a 30-30 crusher which was enlarged to 30-54. It is driven by a 200-hp. Cummins diesel engine.

The product of the primary crusher is carried on a 30-in. belt conveyor to a 4- by 12-ft. Selectro 3-deck screen. The oversize from the screen is chuted to a surge bin over a 3640 Dixie hammermill which is driven by an 8 DC 1125 Buda engine. The crusher product is returned to the screen. This screen makes agstone and road rock, which are discharged

The double-impeller primary crusher which has been enlarged from 30-30 to 30-54.

into truck loading bins. The agstone can also be fed on a conveyor which feeds to a 3,500-ton capacity octagonal storage building. A second similar building is used for dry chip storage.

The ¾-in. stone used for making specialty products is trucked to a surge bin which feeds a Pettibone-Mulliken oil-fired rotary drier. A bucket elevator takes the dried stone to a steel storage bin from which it is fed to a Stedman cage mill. This unit is driven by two 8 DC 1125 Buda engines. The mill product is fed by a bucket elevator to a 12-ft. Raymond separator which makes the finer separations; the coarser sizing is done by 6 Sweco separators and a Nordberg Symons V screen. The Sweco separators replaced two regular type vibrating screens which could not do fine sizing efficiently. Each unit can make five different sizes but usually makes only two. Separations are being made up to 200-mesh, but the units will size up to 325-mesh. This equipment has made possible new outlets and products and has resulted in more accurate and efficient sizing, thus reducing the circulating load in the crushing and screening circuit.

The fine products are discharged into bins from which they can be loaded into trucks for bulk shipment. These bins also feed to three bag packers—one a Coddington. Raymond 80-lb. multi-wall bags are used. There is a 40- by 100-ft. warehouse for the storage of bagged products.

Ample public utility power was available in this area but no satis-

The oil-fired drier which dries the limestone before it is pulverized.

Two of the six circular vibrating screen separators which size special fine products.

Left: Looking up toward the 12-ft. separator used in the sizing of specialized fine limestone products.

Right: One of the three packers which fill multi-wall paper bags.

factory arrangements were possible. For this reason Mr. Moran started out using diesel engines and he has seen no reason to change. Most of the equipment is driven direct by these engines but some units in comparatively remote locations are driven by electric motors. Power for these motors is provided by a diesel-generating set consisting of a 180-kw. Westinghouse generator driven by a 1125 Buda engine. There is also a standby 35-kw. generating set.

HARRY D. SIMONTON, assistant treasurer and manager of the Federal Portland Cement Company, Buffalo, N. Y., has been elected general secretary of the Niagara Frontier Industrial Traffic League.

February Building Total Hits Record High for Month

Expenditures for new construction declined less than seasonally in February, 1954, to $2,300,000,000, and were at a record high for the month, according to preliminary estimates of the U. S. Department of Labor and the U. S. Department of Commerce. Total outlays were at an annual rate of well over $36,000,000,000, after allowance for seasonal factors.

Private residential building, highway construction, and most types of private nonresidential building showed less-than-seasonal declines during February, while public school, hospital, and sewer and water facilities construction rose contraseasonally. Decreases last month were about seasonal for privately-owned public utilities, but more than is usual for stores, military installations and conservation and development work.

During the first 2 months of this year, expenditures for all new construction totaled $4,750,000,000, 2 percent more than the January-February, 1953, total. A shift had occurred over the year in the importance of the various types of construction under way.

Recreational building also was up over the year, by a half, while educational (private and public) and religious bulding were about 20 percent higher. Utilities, and sewer and water facilities construction were up by more than 10 percent, roadbuilding was moderately higher, and new private residential building maintained a slight edge over 1953.

Thus far in 1954, expenditures for all types of new private construction totaled $3,360,000,000—5 percent above last year's total for the same period. Outlays for new public construction, at $1,390,000,000, trailed the 1953 figure by 4 percent.

Earnings of Canada Cement Company Limited, Montreal, Que., went to a new high in the year ended November 30, 1953, as sales rose 19 percent. Net profit amounted to $5,454,965, an increase of nearly 35 percent over the previous year's figure of $4,044,994.

Helpful Volume Describes Operation of Excavators

How to Operate Excavation Equipment, a handbook by Herbert L. Nichols Jr. is significantly subtitled "For boys from 10 to 70 and for men who need to know." The foreword of this unusual publication is by G. J. O'Connell, equipment manager for F. H. McGraw & Company, prime contractor on the $1,000,000,000 atomic project in Kentucky.

In the seven chapters of the book the author covers such subjects as revolving shovels, conveyor machinery, tractors and dozers, tractor loaders, hauling units, graders and rollers, and miscellaneous types of units for drilling, ripping, loading, and pumping. The text is presented in a concise and simple manner for easy readability. Illustrations are unusually clear and helpful. A glossary provides definitions and explanations of terms which might be unfamiliar to the reader. Published by North Castle Books, Greenwich, Conn. Price, $1.50 per copy.

A Letter to the Editor

Agstone Producer Forced To Quit!

With the assurance of government support of agricultural limestone purchases on a high level for at least another year, agstone producers in general seem to be optimistic about the future and fairly well satisfied with things as they are. At the recent N.A.L.I. convention in Chicago there was a record attendance, and the association membership was at a new high. The keynote of this meeting was optimism; sales in 1954 were expected to be from 50 to 100 percent above 1953.

There are dark spots in this bright picture, however, as is evident from the following letter from a progressive and well-established producer in a fertile farming area. He has been forced out of business by conditions which undoubtedly exist to some degree in other areas and which adversely affect other producers. His letter was written with the sincere purpose of making other producers aware of these conditions and desirous of doing something about them. The letter follows.—The Editor

To the Editor:

For the past 19 years, since March, 1935, we at Terminal Materials Company in St. Joseph, Mich., have been engaged in the distribution of agricultural limestone to lime haulers and direct to the farmer consumers. In March, 1954, we decided that we could not longer afford to distribute agricultural lime and are selling our present stocks, our trucks, our lime-handling equipment, and abandoning this phase of our business. We made this decision after a careful study of our handling and administrative costs and a thorough consideration of the profit prospects of this type of business in the immediate future. Our decision was not hastily made; and while we dislike to refer to our own situation, we believe that our conclusions may interest others in this trade.

Our tonnage approximated 38,000 tons annually, and our position in the total agricultural lime picture was insignificant. However, the mortality rate in this field being exceptionally high, we feel that the collective importance of those who have preceded us in leaving the agricultural lime distribution industry and those who will follow us will be reflected in lower tonnage figures for the industry as a whole.

We fully realize that we have been operating in a small section of one state and that our problems are not necessarily common in their entirety to those of operators in other sections of the country. We do feel, however, that certain problems are more common . . . than others and it is with these that we wish to deal.

Many of the problems of the agricultural lime distributor arise from the attitude of the producer of agricultural lime toward his product when it is a waste product or a by-product in the production of larger sizes of limestone. The presence of large accumulations of waste materials suitable for liming, which may at any time be dumped into the existing markets at extremely low prices, most certainly has the effect of depressing the general market price level and discouraging many competent people from entering the agricultural lime distribution business. This price-depressing influence follows the product to its final destination on the fields of the farmer consumer. The problems of the producers are very real; rehandling and storage charges reflect higher operating costs. However, the present approach to this problem, that of dumping, does not solve the problem. In general, it just switches the problem from one producer to another. The end result is to diminish the market by reason of the fact that it discourages those engaged in the business of distribution.

There is another approach to this problem which we believe can solve it for both the producer and the distributor. That approach is a sound and sufficient merchandising program. We believe that although many millions of tons of limestone have been sold in the last few years, the market has barely been scratched, and that the potential market is far greater than the total production of agricultural lime at its present level. This opinion is borne out by United States Department of Agriculture figures which the National Agricultural Limestone Institute has distributed. We have further proof that this contention is true in our own experience. We have found through a three-year testing program in one of the counties in which we have operated that 64% of the total arable land in this county is in need of lime. The results of our testing program closely parallel the results of tests in other parts of the state by Michigan State College authorities. The fact is that 64 percent of the land in this county needs lime in spite of the fact that 20,000 or more tons of lime have been applied yearly for the last several years. There are 270,271 acres of limeable land in this county, and 64 percent of this acreage would be 172,973 acres. If we lime this land only once, using only two tons to the acre, a total of 345,946 tons would be used. We have not considered the 36 percent that will be needing lime as the plants use it and as it is leached.

That something is wrong in the agricultural lime picture is definitely indicated by the fact that the fertilizer industry in 1953 sold in the state of Michigan 610,601 tons of fertilizer at an average price of more than $60 per ton, while during the same period only about 315,000 tons of agricultural lime were sold at an average price of less than $5. It must be remembered that fertilizers are applied usually on the basis of only a few hundred pounds to the acre, whereas lime is seldom spread at less than 1½ tons per acre. The difference is merchandising.

The national statistics on the use of agricultural lime indicate that in 1952 the need for lime in the United States exceeded the amount sold by 53,190,143 tons. Certainly the potential market for agricultural lime is great enough to warrant an extensive national merchandising program by the industry as a whole; and while there are many problems incident to such a program, they are not impossible of solution.

The agricultural lime industry, stepchild of the stone industry, has for too long been a ward of the Federal Government. The dependence of the industry on federal subsidy has largely prevented it from growing up and seeking the real and permanent solution of its problems. As is often the case, help from government subsidy entails a certain amount of government control which may be more damaging than the subsidy is helpful. That this may be true in the agricultural lime industry is indicated by the fact that although the appropriation for subsidizing the use of agricultural lime has been relatively the same since

(*Continued on page* 123)

Agricultural Limestone Div. Of Pa. Stone Producers Convenes at Harrisburg

Members of the Agricultural Limestone Division of the Pennsylvania Stone Producers Association held their annual meeting at the Hotel Penn-Harris, Harrisburg, on April 2, 1954.

A featured speaker at the general meeting, Dr. H. B. Sprague, head, Department of Agronomy, Penn State University, discussed a "permanent agriculture" and used Pennsylvania as an example. He stated that yields per acre in Pennsylvania had been increasing, apparently indicating that agriculture in general is improving; but he pointed out that while farmers are getting larger crops with the aid of better fertilizer, more lime, and superior equipment, they are utilizing only the upper 6 or 8 inches of the soil, allowing the subsoil to lose its fertility. He warned that this subsoil is becoming more compacted, less porous, and depleted of its organic substances—conditions contributing to the loss of fertility in this area. Dr. Sprague cited a study which disclosed that about 3,000,000 acres of farm land had been abandoned in the state; and he declared that he believed intensive farming of the top soil and neglect of that part underlying this thin layer is responsible for the situation.

At the annual business meeting the following officers were elected: chairman, Leonard S. Fry (Fry Coal & Stone Co., Mercersburg, Pa., who was re-elected; vice-chairman, D. K. Shroyer (H. E. Millard Lime & Stone Co., Annville, Pa.); treasurer, H. M. Binkley (Binkley Bros., Inc., East Petersburg, Pa.); secretary, H. H. Wagner (general manager of the Pennsylvania Stone Producers Association, Harrisburg).

For the board of directors, these men were named for various sections:

Eastern Section—Ivan M. Martin (Ivan M. Martin, Inc., Blue Ball) and Fred Roberts (Evans-Roberts, Inc., Norristown).

Central Section—W. O. Faylor (Faylor Lime & Stone Co., Winfield) and E. E. Peterson (Pine Creek Lime & Stone Co., Jersey Shore).

Western Section—Robert Hammett (The Carbon Limestone Co., Lowellville, Ohio) and Hershel W. Lamb (Grove City Limestone Co., Branchton).

Chairman Fry appointed a committee to meet with the state agricultural soil conservation committee to discuss methods of accelerating the liming program in Pennsylvania for the rest of the year.

N. A. L. I. Survey Shows U. S. Farmers Overwhelmingly in Favor of ACP

THE National Agricultural Limestone Institute has for some years carried on a valiant battle for the continuation and expansion of the Agricultural Conservation Program. There have been ups and downs, but it is becoming more and more evident that farmers, congressmen, agricultural leaders, and the public are realizing the importance of conservation, including the use of lime on the soil, to the health and future welfare of our people.

Perhaps the most effective step taken by N.A.L.I. to justify this program was a series of state and nationwide surveys of farmer opinion on this subject. This project was started late in 1953 after a meeting of the Hope Committee in Massachusetts made it apparent that American Farm Bureau and National Grange leaders were not correctly reflecting the views of their members concerning the ACP. A survey was first made of farmer opinion in Massachusetts, with a ballot going to every farmer. The second hearing was held in Maine; and this was followed by a survey of every farmer in that state. Later N.A.L.I. surveyed every farmer in New Hampshire and Connecticut. As more requests for surveys of other states kept coming and both time and money were limited, it was decided to make a national survey, and 25,00 ballots went to the remaining 44 states.

Tabulation of these surveys, now virtually completed, shows an overwhelming majority of U. S. farmers (83.7 percent) to be in favor of continuing ACP, and 72.4 percent to be in favor of increasing it. The amazing thing is that Farm Bureau and Grange members were only a few

Tabulated results of the nationwide survey conducted by N.A.L.I. (See p. 123 for remaining states.)

% Vote to Continue ACP	% Vote to Increase ACP	% Vote to Cut ACP		% Vote to Continue ACP	% Vote to Increase ACP	% Vote to Cut ACP
Alabama				**Iowa**		
85.2	78.1	14.8	All Farmers	94.8	86.2	5.2
-	-	-	Farm Bureau Members	92.5	79.9	7.5
-	-	-	Grange Members	83.3	78.3	16.3
Arizona				**Kansas**		
62.5	49.3	37.5	All Farmers	86.7	75.4	13.3
62.1	50.1	37.9	Farm Bureau Members	81.8	72.7	18.2
-	-	-	Grange Members	85.6	76.9	14.4
Arkansas				**Kentucky**		
84.1	80.8	15.9	All Farmers	84.4	71.2	15.6
81.9	77.2	18.1	Farm Bureau Members	82.1	70.8	17.9
California				**Louisiana**		
71.8	53.7	28.2	All Farmers	83.8	79.5	16.2
71.0	47.7	29.0	Farm Bureau Members	85.0	80.2	15.0
73.3	53.3	26.7	Grange Members	-	-	-
Colorado				**Maine**		
80.6	73.0	19.4	All Farmers	91.0	73.3	9.0
77.7	68.5	22.3	Farm Bureau Members	89.4	73.4	10.6
79.2	71.1	20.8	Grange Members	88.3	72.2	11.7
Connecticut				**Maryland**		
80.7	69.0	19.0	All Farmers	80.9	65.7	19.1
78.3	66.5	21.7	Farm Bureau Members	78.2	60.6	21.8
73.2	61.9	26.8	Grange Members	-	-	-
Delaware				**Massachusetts**		
84.1	69.3	15.9	All Farmers	82.9	69.5	17.1
-	-	-	Farm Bureau Members	76.5	63.1	23.5
-	-	-	Grange Members	78.8	61.2	21.2
Florida				**Michigan**		
81.8	72.2	18.2	All Farmers	87.9	79.9	12.1
78.4	68.1	21.6	Farm Bureau Members	78.6	70.0	21.4
-	-	-	Grange Members	79.8	72.8	20.2
Georgia				**Minnesota**		
85.6	70.8	14.4	All Farmers	84.2	80.4	15.8
83.7	74.3	16.3	Farm Bureau Members	86.2	79.5	13.8
Idaho				**Mississippi**		
77.6	61.0	22.4	All Farmers	87.5	76.3	12.5
66.1	57.4	33.9	Farm Bureau Members	82.6	74.6	17.4
75.0	60.9	25.0	Grange Members	-	-	-
Illinois				**Missouri**		
87.9	84.9	12.1	All Farmers	83.9	77.2	16.1
87.5	83.4	12.5	Farm Bureau Members	78.5	74.1	21.5
85.2	79.7	14.8	Grange Members	-	-	-
Indiana				**Montana**		
84.2	76.0	15.8	All Farmers	82.6	73.9	17.4
83.9	78.7	16.1	Farm Bureau Members	-	-	-
79.6	74.5	20.4	Grange Members	-	-	-

percentage points below all farmers combined in each category. This was in direct contradiction to the publicly expressed statements of some of the leaders of these groups. These results proved very effective in reversing some of the anti-ACP thinking in Congress and in obtaining more funds for conservation practices.

The following is a summary of the results of these surveys for all 48 states and a table of the results in each individual state. It will be noted that several states had too few farmers reporting that they were Grange members to make possible a significant report.

Summary AllStates	Percent Vote to Continue	Percent Vote to Increase	Percent Vote to Cut
All Farmers	83.7	72.4	16.3
Far Bureau Members	79.3	68.3	20.7
Grange Members	80.6	70.5	19.4

W. H. HAEFLIGER of Dixon, Ill., has retired as field engineer for the Portland Cement Association in northwestern Illinois. ALLEN W. OSTERLING, formerly of the Illinois district, succeeds Mr. Haefliger.

A Letter to the Editor

(*Continued from page* 121)

1950, the amounts sold annually have declined since that time. Actually, A.S.C. and P.M.A. programs have in many cases, contrary to their avowed purpose, deprived the farmer of a dependable source of liming materials and prevented him from using lime. In this connection I would like to quote in its entirety an article published in the *News-Palladium* of Benton Harbor, Mich., March 19, 1954, illustrating this point:

"MSC Ag Chiefs Blame 'Fair Price' for Lime Decline"

"A strong recommendation to the state Agricultural Stabilization and Conservation committee that the 'fair price' practice of contracting for lime for the Agricultural Conservation programs in Michigan counties be discontinued in favor of a free market system was made this week by MSC agricultural leaders.

"Touched off when Terminal Materials Co. of St. Joseph, the biggest agricultural lime dealer in the state, quit the lime business last week, the letter laid much of the blame for steadily declining lime use on Michigan farms on the practice.

"Signators of the letter were Clifford M. Hardin, dean of the school of agriculture; L. M. Turk, director of the Michigan Agricultural Experiment Station; R. L. Cook, head of the soil science department, and B. D. Kuhn, state leader of agricultural programs.

" 'Per dollar invested,' they wrote, 'the returns from money expended for lime are much greater than the returns from that spent for fertilizer.

" 'Farmers can afford to buy lime. In fact, they must have lime or they fail. Furthermore, they can afford and should expect to pay enough to make the handling of agricultural lime a respectable and stable business. Then they can be in a position to select the material they want and can expect and obtain efficient and timely service.

" 'Under the so-called "fair price" program farmers cannot expect this service and dealers cannot afford to spend time and money selling lime.

" 'Reports prepared by the college on lime use in the state show that from over 900,000 tons of lime applied to the soil in both 1946 and 1947, the quantity has declined each year and was 539,920 tons in 1952 (limestone, marl, and refuse lime).

" 'The agricultural lime business is uncertain,' the college agricultural leaders wrote the state ASC committee, 'and profits are low. A producer or dealer cannot afford to invest in advertising, promotion, or selling because he does not know how long he can remain in business. An irresponsible competitor can ruin the business for both by a bid so low that neither can survive. As a result both dealers fail and the farmers of the area do not get the lime. . .

" 'We strongly urge the state ASC committee to carefully consider the agricultural lime program. We further recommend that agricultural lime be handled in a manner similar to that under which the present farm drain tile program is being conducted.' "

There are limiting factors other than price imposed by the federal liming program. The necessity of co-operating with A.S.C. officials to stay in the lime business, where their program is operative, increases administrative costs substantially. We have also consistently lost three to four months . . . each year waiting for the program to take shape.

Direct sales to the farmer con-

(*Continued on page* 128)

% Vote to Continue ACP	% Vote to Increase ACP	% Vote to Cut ACP		% Vote to Continue ACP	% Vote to Increase ACP	% Vote to Cut ACP
Nebraska				**Rhode Island**		
81.4	73.7	18.6	All Farmers	81.8	63.6	18.2
78.8	70.3	21.2	Farm Bureau Members	76.6	60.2	23.4
-	-	-	Grange Members	-	-	-
Nevada				**South Carolina**		
78.6	64.3	21.4	All Farmers	87.4	79.8	12.6
71.4	61.0	28.6	Farm Bureau Members	86.4	75.7	13.6
New Hampshire				**South Dakota**		
80.1	64.8	19.9	All Farmers	88.4	73.7	11.6
75.6	58.7	24.4	Farm Bureau Members	-	-	-
76.9	60.1	23.1	Grange Members	-	-	-
New Jersey				**Tennessee**		
78.1	63.2	21.9	All Farmers	84.0	79.6	16.0
76.9	64.7	23.1	Farm Bureau Members	83.8	79.2	16.2
78.6	70.4	21.4	Grange Members	-	-	-
New Mexico				**Texas**		
80.7	64.6	19.3	All Farmers	82.6	75.7	17.4
74.4	61.2	25.6	Farm Bureau Members	83.4	75.5	16.6
New York				**Utah**		
85.2	76.7	14.8	All Farmers	81.6	68.1	18.4
79.3	72.4	20.7	Farm Bureau Members	77.9	63.6	22.1
82.5	77.5	17.5	Grange Members	-	-	-
North Carolina				**Vermont**		
88.4	73.9	11.6	All Farmers	78.1	66.6	21.9
85.1	69.6	14.9	Farm Bureau Members	76.9	67.6	23.1
-	-	-	Grange Members	73.7	61.0	26.3
North Dakota				**Virginia**		
88.9	73.3	11.1	All Farmers	82.2	73.3	17.8
77.8	58.5	22.2	Farm Bureau Members	75.2	65.9	24.8
-	-	-	Grange Members	-	-	-
Ohio				**Washington**		
88.5	81.1	11.5	All Farmers	81.1	67.0	18.9
80.7	73.4	19.3	Farm Bureau Members	61.5	50.8	38.5
87.9	80.6	12.1	Grange Members	80.0	66.8	20.0
Oklahoma				**West Virginia**		
89.2	79.8	10.8	All Farmers	80.8	72.3	19.2
80.7	69.3	19.3	Farm Bureau Members	77.7	70.5	22.3
-	-	-	Grange Members	-	-	-
Oregon				**Wisconsin**		
82.8	69.3	17.2	All Farmers	82.1	73.8	17.9
75.5	58.5	24.5	Farm Bureau Members	81.2	78.0	18.8
84.4	78.1	15.6	Grange Members	-	-	-
Pennsylvania				**Wyoming**		
82.8	77.9	17.2	All Farmers	81.5	72.8	18.5
76.3	68.4	23.7	Farm Bureau Members	80.2	71.2	19.8
81.1	72.4	18.9	Grange Members	-	-	-

Lime-Bound Masonry Materials

By N. V. S. KNIBBS, D. SC.
Knibbs & Thyer
Consulting Chemical Engineers

THE increasing use of steam under pressure to cure cement-bound masonry structural materials and to decrease their subsequent shrinkage and moisture movement is a feature of recent developments in this field. Recent work sponsored by the National Lime Association at the University of Toledo has shown that under these conditions a part of the cement may with advantage be replaced by lime. In the following discussion it is suggested that the complete substitution of cement by lime may frequently result in a better and cheaper product.

Concrete masonry units have the advantage of being made in relatively simple and inexpensive equipment, which can be located favorably to the market, but their high drying shrinkage and moisture movement has made it necessary to introduce pressure-steam curing, which increases the equipment required for manufacture, but which also entails other interesting possibilities, as will be shown.

The chemical compound which produces most of the bond in set portland cement is hydrated dicalcium silicate; and that compound, with the calcium hydroxide which is also formed during setting, is the cause of the high drying shrinkage, moisture movement, and long-term aging shrinkage of cement-bound units. Curing by steam under pressure causes those compounds to react with fine silica (added to or already in the aggregate) forming hydrated mono-calcium silicate, a compound which is dimensionally very much more stable. Exactly the same compound — hydrated monocalcium silicate—is formed directly from hydrated lime and silica by the same process of steam curing under pressure. Since portland cement contains from 60 to 65 percent calcium oxide, some of which is present in combinations of relatively low cementing value, it is evident that much less lime than cement is required to yield the same amount of monocalcium silicate, the effective final cementitious compound. It is also a fact, proved experimentally, that hydrated monocalcium silicate is formed more rapidly from lime and silica than from dicalcium silicate and silica.

A glimpse at the history of the synthetic cellular stone industry of Sweden is of interest. That material was at first made with calcined shale (as a filler or aggregate which is also pozzolanic), cement, and lime, with water to form a thick slurry, and aluminum dust to aerate it by its generation of hydrogen gas. Hardening was by the air setting of the cement. Excessive shrinkage led to experiments with pressure-steam curing made by the Swedish architect, Dr. Axel Eriksson, who found that this method removed that defect, at the same time improving strength. Following up this clue, he proved that the cement in the mix is unnecessary and is better replaced by a smaller quantity of lime. That was 30 years ago.

Twenty years ago the author be-

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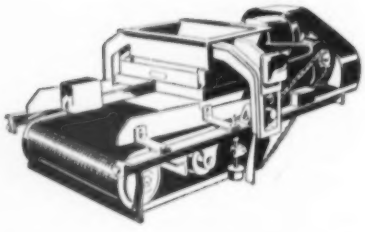

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gan an investigation of the suitability of English raw materials for the production of cellular stone similar to that made in Sweden. It was soon discovered that a wide range of siliceous materials could successfully be used, and also that the combination of lime with siliceous material could be employed instead of cement in the whole range of precast concrete products, if pressure-steam curing is adopted. In those investigations samples of many different concrete articles were made, using shale-lime and silica-lime instead of cement, and these samples have been in use, exposed to rain and frost, ever since, side by side with products made of cement. The samples include paving flags, flooring and roofing tiles, and various light and heavy masonry blocks; and they all show up well in comparison with the items made of cement.

Lime-silica-bound concrete units have the advantage of good appearance, especially in color, and they cost less than pressure-steam-cured cement products. On the other hand, the lime products attain little strength until they are steamed and must therefore be more carefully handled; in some instances they must be left in the molds until they are steam-hardened.

Sand-lime bricks have been made and used in enormous quantities for over half a century, and because cement-bound bricks have also been produced over the same period the economy and advantages of lime-silica over cement in this application are well known. With this example of the advantages of lime, one may wonder why it has not been more widely applied to other pressed or molded products in which cement is at present the binding material. The answer lies in the fact that special precautions must be observed to attain satisfactory results, and these precautions have not generally been understood.

The strength of lime-silica-bound products depends not only on the amount or proportion of the cementitious compound produced but also, as in cement-bound products, on closeness of contact, which in wet-molded materials (as distinct from those formed semi-dry under high pressure) depends largely on the water:cement ratio. Portland cement has the advantage, compared with hydrated lime as usually available, of requiring much less water to produce a workable mix, and this is reflected in the strength of the product and also in its porosity. Even in semi-dry pressed mixes the form

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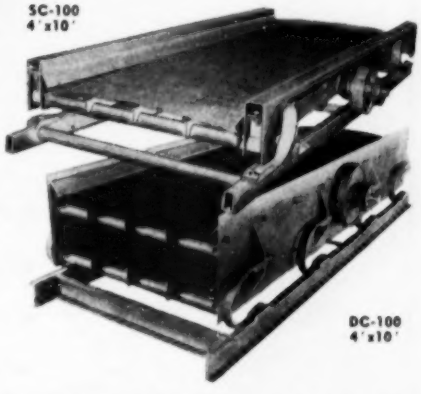

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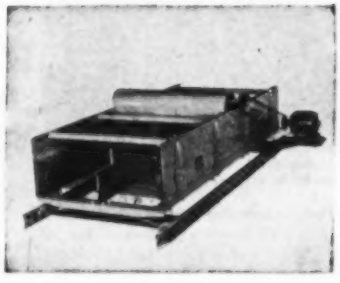

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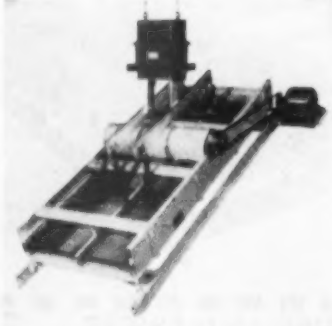

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of the cement particles is more favorable to close contact than that of the particles of hydrate, as ordinarily produced. To attain high strengths and low porosities in lime products, especially those made with wet mixes, it is therefore necessary to use lime which has special properties, which a few limes naturally possess in some degree but which more often must be developed by special treatment. The properties of the reactive siliceous constituent and of the aggregate, in their influence on the water content of the mix, are also important; but these are well understood from ordinary concrete practice. Siliceous materials of low volume weight generally produce poor results because of their high water requirements.

The research on lime-silica-bound concrete products and cellular stone therefore largely resolved itself into the technique of preparing quicklime and hydrated lime in forms which can be used with the minimum of water and which are free from the defect of expansion during steaming, due to incomplete hydration before steam-curing.

Lime for use in lime-silica-bound materials may be in the form of the oxide or of the hydroxide. The oxide has the advantage of greater volume weight and of requiring less water to produce a workable or fluid mix, but it has obvious limitations. On the one hand, it must not react with the water with which it is mixed until the mixture is placed in the mold or pressed into shape. On the other hand, it must react completely, all the oxide being converted to hydroxide, before hardening occurs in the steam treatment; otherwise expansion of the lime will coincide with the hardening reaction, and a weakening of the bond or, at worst, complete disintegration of the molded articles will result. The ideal quicklime for lime-silica-bound materials is therefore a finely pulverized one, which requires the least water to produce a workable mix, which remains inactive for a period of, say, 15 minutes or more after mixing, but which then hydrates rapidly and completely without swelling enough to more than fill the voids.

When the article made is formed under pressure from a semi-dry mixture, there is often insufficient water in the mix to hydrate the lime completely, or, even if there is sufficient water, the expansive hydration of the lime may disintegrate the article. For such purposes hydrated lime is generally necessary.

A specification for hydrated lime

for use in sand-lime bricks has been in use for a long time. It has been found adequate for manufacturers who, for the most part, have been content to produce a brick of mediocre quality, in which the quantity of lime used has been the least amount that will develop the degree of strength demanded. In these bricks the lime is used mainly to bond together particles of silica by forming monocalcium silicate at the surfaces of contact produced by the pressure used in the brick presses. Unlike the bond of ordinary concrete, where the cementing medium enters the voids in a graded aggregate, strength depends largely on the intimacy of contact produced by pressing, and is also greatly influenced by the nature of the sand. When the article to be made must be molded without high pressure or made from a sand of poor grading, or where the aggregate is not suited to combination with lime, it is necessary to mix the lime with sufficient finely ground siliceous material to produce the bonding silicate, and for such purposes, if hydrated lime is to be used, a form of hydrate is desirable which, while being finely divided, takes the least possible water to produce a workable mix. The same hydrate will yield a high-quality brick in the ordinary process.

Hydrated lime as ordinarily produced, either wet or dry, has not the best physical properties for use in lime-silica-bound materials. The wet hydrate, or lime putty, is composed of particles to which much water is adsorbed, and the water/lime ratio is high, often being as high as 2:1. Dry-hydrated lime has a better water/lime ratio at standard consistency, but due to the shape of the particles it is poor compared with other materials, such as cement. For example, a water requirement of 100 percent is quite usual, and a figure as low as 75 percent is exceptionally good.

Lime for use in lime-silica-bound materials should therefore be in the form of the oxide (which must have low water requirement, be rather slow in starting to hydrate, but rapid in the completion of hydration once it is started) or in the form of hydroxide (which should have low water requirement and yet be finely divided). Investigations were therefore directed to the production of limes of these types, with considerable success.

Quicklime produced under the right conditions, in a rotary kiln or in a shaft kiln which is operated at relatively low temperatures, hydrates completely in the time available before the hardening reaction in the autoclave, but such lime generally starts to hydrate too rapidly, and its water requirement in mixing is not low. Expansion on hydration may also be too much to be accommodated by the available void space, so that the molded article increases in size. These undesirable properties may be modified to any necessary degree by partial vapor phase prehydration under the right conditions. Such partial prehydration may be carried out without the increase in volume which normally occurs on hydration, and the product, after fine grinding, is slow to begin its further hydration, it has low water requirement, and there is little volume change when hydration is completed in the molded article.

Complete hydration of lightly-burned lime may also be accomplished, using water vapor as the hydration medium, without any disintegration of the quicklime used. The hydrate has the same appearance as the lime from which it is made, and after fine grinding its volume weight is high and the water

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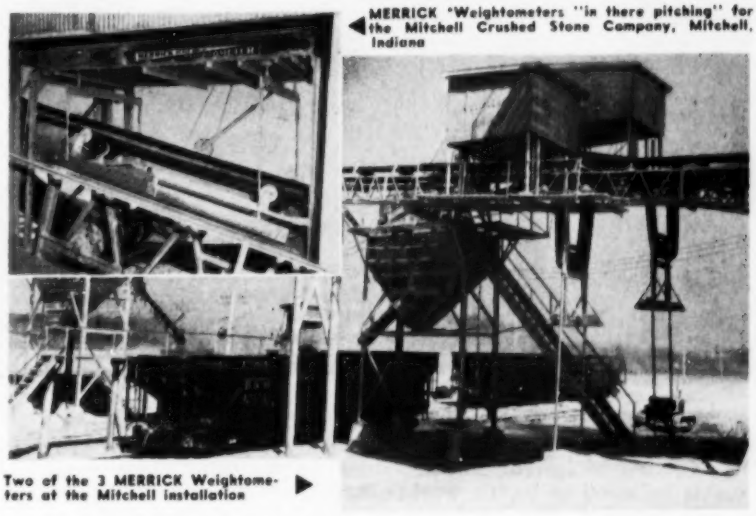

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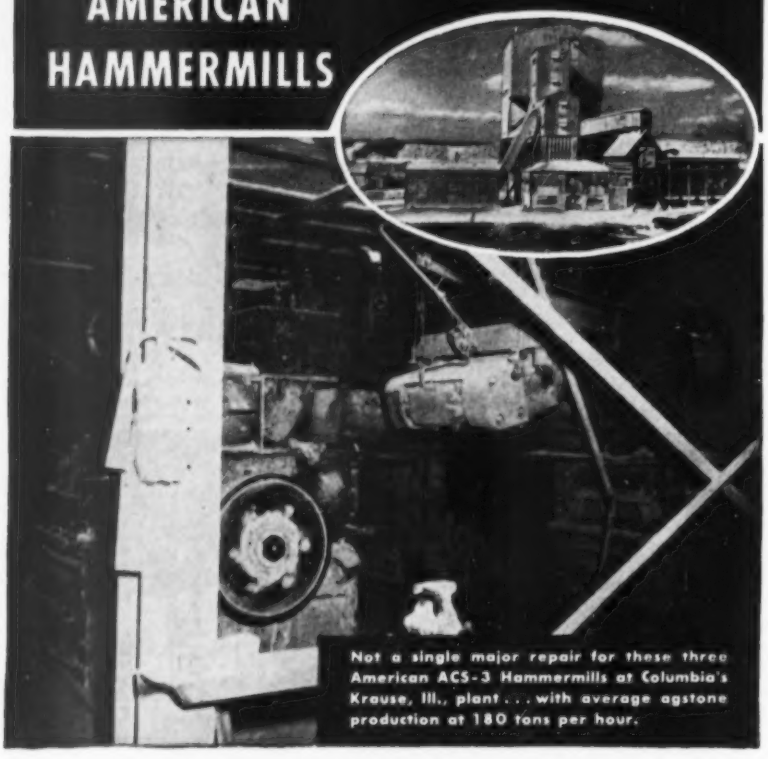

Not a single major repair for these three American ACS-3 Hammermills at Columbia's Krause, Ill., plant . . . with average agstone production at 180 tons per hour.

The Columbia Quarry Company, a pioneer in the production of agricultural limestone, is producing today what is believed to be the world's largest single agstone output. In one year, they have shipped over 5% of the national tonnage. With this background of rock-crushing experience, Columbia has chosen to install American Hammermills in its three plants at Krause, Ill., Valmeyer, Ill., and Elsberry, Mo. At the Krause plant alone, three Americans have produced over 717,909 tons of agstone in the first 30-months—even though feeding on exceptionally hard Lower St. Louis Limestone.

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requirement to produce a molding consistency is low.

These new forms of hydrate and of partially hydrated quicklime yield lime-bound masonry materials of higher quality than has hitherto been possible.

The smaller quantity of lime (compared with cement) that is required to yield a product of the required strength will generally result in a slightly lower total cost when using the former; but in many applications this fact is of less importance than the advantages resulting from the whiteness of nearly all limes. The concrete products made with white lime have the same color as those made with white portland cement, and they may be tinted in the same way, while the cost, of course, is very much lower.

The extensive use of concrete masonry units in America provides immense scope for the manufacture of cheaper and better products, using lime instead of cement, if supplies of lime of the right quality are available; and where steam curing under pressure is already used, the manufacture of lime-silica-bound blocks can be undertaken without additional equipment. Building blocks and slabs, paving blocks, tiles, etc., would be made in exactly the same way as similar cement-bound products, while lightweight products, cast and cured in their molds, would be produced without expanded clay or other lightweight aggregates.

A Letter to the Editor

(*From page* 123)

sumer are held up because if government assistance is available, he wants it; and he has to wait for the program to take shape in order that he may . . . qualify under it.

While it is agreed that government aid gave the sale of agricultural lime its original impetus, it seems that it is high time that the industry came of age and controlled its own destiny.

A happy and prosperous distributor organization is fundamental to the success of any manufacturer or producer. The agricultural lime industry does not have such a distributor organization. It would appear that in any program to increase the use of agricultural lime, first consideration should be given to developing a sound plan that would provide those in the business of distribution with reasonable security in that business and a real income opportunity.

B. G. Lindenfeld, Manager
Terminal Materials Company,
St. Joseph, Mich.

Thorstenberg and Langston To Head Texas Producers

Russell Thorstenberg of Thorstenberg & Tamborello, Houston, was elected president of the Texas Aggregates Association at its annual meeting held in Austin on March 16. Other officers for the coming year are as follows: vice-president, John H. Langston, Servtex Materials Co., New Braunfels; and secretary, G. O. Rogers, Travis Materials Co., Austin.

The following were named directors: W. D. Bryson, Panhandle Gravel Co., Amarillo; John H. White, White's Uvalde Mines, San Antonio; H. M. Lacy, Gifford-Hill & Co., Dallas; C. A. Chipley, Fordyce Gravel Co., San Antonio; George G. Smith, Texas Construction Materials Co., Houston; and Houston Clinton, Houston Clinton & Co., Burnet.

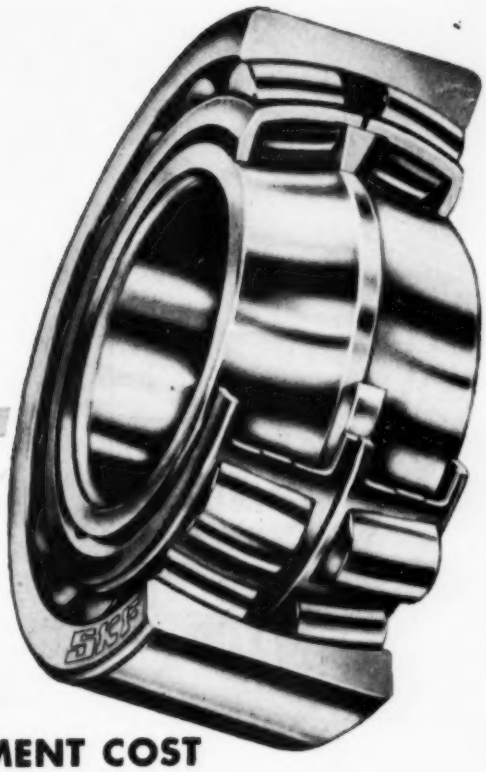
C. S. McLellan, executive director, reported a substantial increase in membership, with combined annual production of almost 18,000,000 tons. There are now 32 producers in the association.

Many legislative matters came before the association last year, including the defeat of a proposed production tax on all products and a gross receipts tax on the production of ready-mixed concrete. Since truck transportation of aggregates increased materially, there was mounting interest among industry members in all truck legislation. Considerable effort was spent in attempting to correct some of the abuses in insurance practices affecting the industry.

John H. White, retiring president, reported plans for establishing local and state safety programs within the association.

Twenty-nine employees of the Lincoln Sand & Gravel Company, Lincoln, Ill., were awarded silver dollars, one for each year of company service, at a "Service Recognition" banquet in January. Clarence Bailey, who received $43, has the longest record of employment with the firm. William Bergman, a close second, received $42.

Sales of Cleveland Quarries Company, Amherst, Ohio, reached a record high in the year ended November 30, 1953, with a total of $7,329,667, as compared with $6,356,650 in 1952. Earnings climbed to $292,635 ($7.42 per share), the highest point in recent years. Earnings for 1952 were $256,548 ($6.51 per share).



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• Scene at the Carter-Waters Haydite plant in New Market, Mo. This new Fruehauf trailer is used for hauling Haydite (an expanded shale lightweight aggregate) by a contractor hauler. The unit, which is equipped with a tarpaulin, is a special hopper-bottom model.

Bauxite Output Declines Despite 4th Qtr. Increase

Mine production of bauxite by the eight companies operating in the United States increased 4 percent from the third to the fourth quarter of 1953, and the annual total for 1953 decreased 5 percent with respect to that of 1952, according to the U.S. Bureau of Mines. Arkansas produced 98 percent of the total during the fourth quarter and 97 percent during the year 1953.

The 1953 total output was 1,582,287 long tons; the 1952 total was 1,667,047 long tons.

More than 50% of the total of Hydrated Lime produced each year in the United States is made in —

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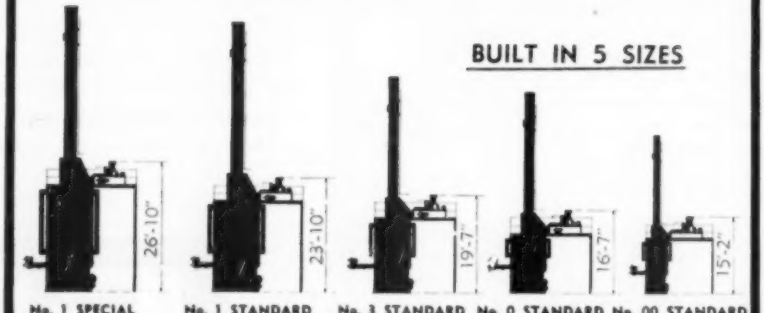

L. H. EBERHART TIFFIN, OHIO

Cement Companies' Reports Show General Rising Trend

Net sales of the Glens Falls Portland Cement Company in 1953 amounted to $4,883,220; in 1952 sales were $4,745,439. Net income last year was $575,562, compared with $557,100 in 1952.

For the Alpha Portland Cement Company the following totals were reported: 1953 net sales, $25,686,507; 1952 net sales, $25,341,786; 1953 net profit, $2,799,104; 1952 net profit, $2,779,962.

The Bessemer Limestone and Cement Company chalked up net sales amounting to $7,146,173 in 1953; the previous year's sales were $6,932,741. Net income earned in 1953 was $1,248,828; in 1952 the figure was $1,111,540.

Gross revenues of the Halliburton Oil Well Cementing Company and subsidiaries for 1953 were given as $112,995,134, compared with $101,645,098 in the previous year. Net income last year was $8,298,668, while the 1952 income total was $1,312,000.

Penn-Dixie Cement Corporation officials reported 1953 total net sales of $28,051,000; in 1952 net sales amounted to $25,057,000. Net income for 1953 stood at $3,354,000; in the previous year net income was $2,672,000.

In the 12 months ending September 30, 1953, net income for the North American Cement Corporation was $956,676 ($3.09 per common share); for the comparable 12-month period in 1952 net income was $895,216 ($2.89 per common share).

Net income of the Missouri Portland Cement Company in 1953 was recorded as $1,746,116 ($5.93 per share); in 1952 net income was $1,704,088 ($5.79 per share).

W. A. Wecker, president of the Marquette Cement Manufacturing Company, reported a net income for his company in 1953 of $3,831,917, against $3,527,441 in 1952. Sales totaled $29,792,647 in 1953, compared with $28,344,368 in 1952.

A preliminary consolidated report for 1953 gives the following figures for the Lone Star Cement Corporation: Sales: $78,640,968; net profit, $9,037,640. These figures were slightly below the previous year's totals of $80,975,548 (sales) and $9,067,861 (net profit).

For the nine months ending September 30, 1953, Lehigh Portland Cement Company's sales amounted to $44,432,497; in 1952 the total was $41,473,910. Net profit during the 1953 nine-month period was $2,106,735; the previous year net profit stood at $2,205,053.

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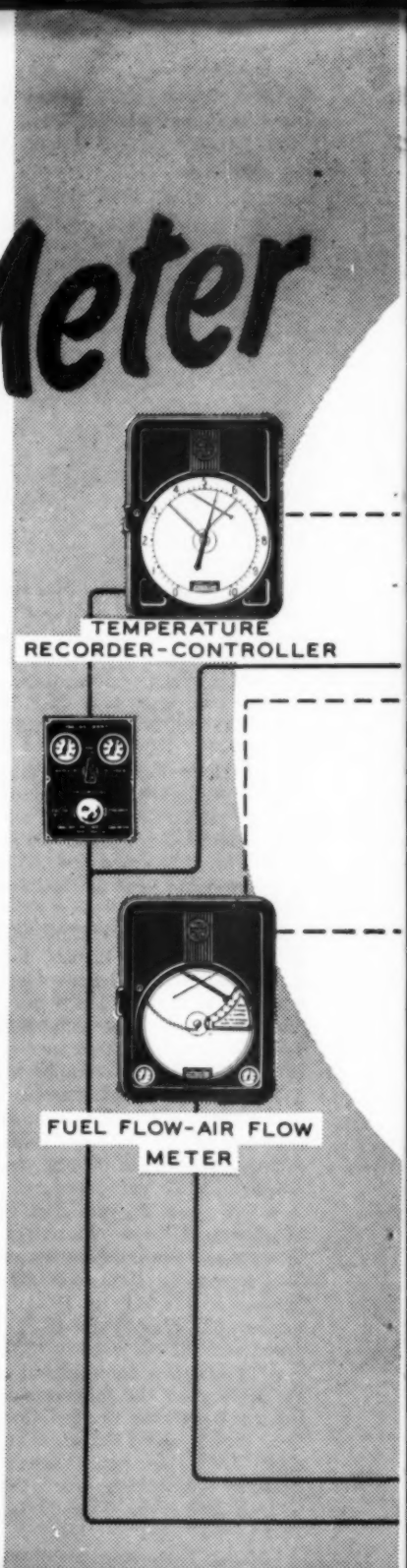

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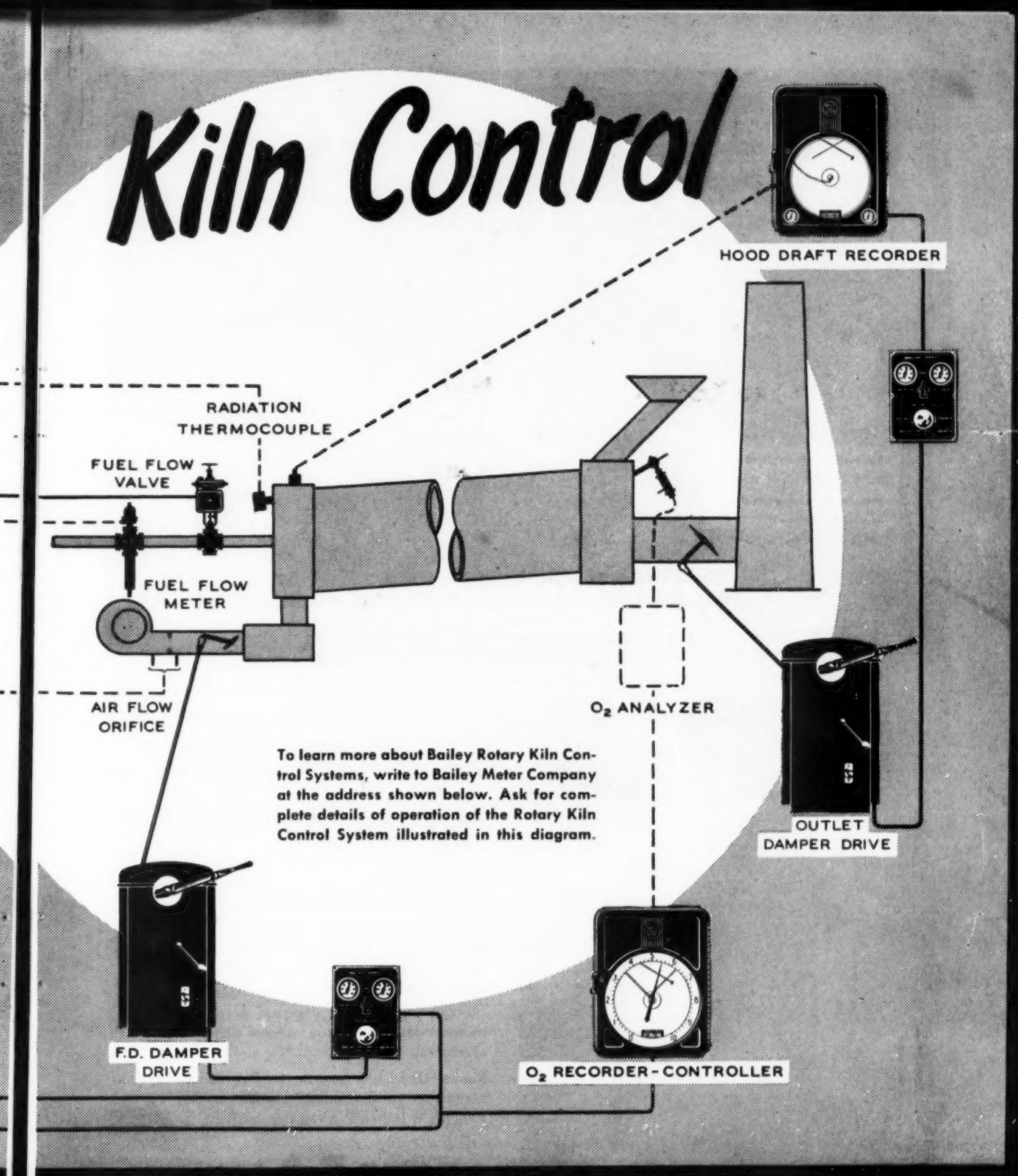

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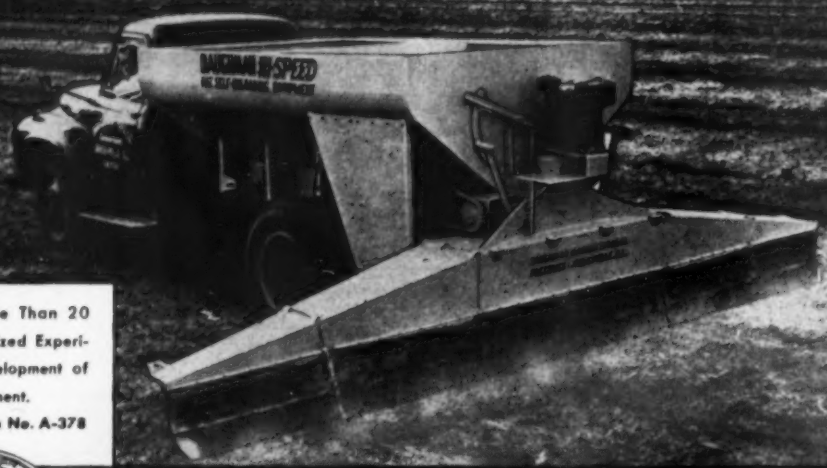

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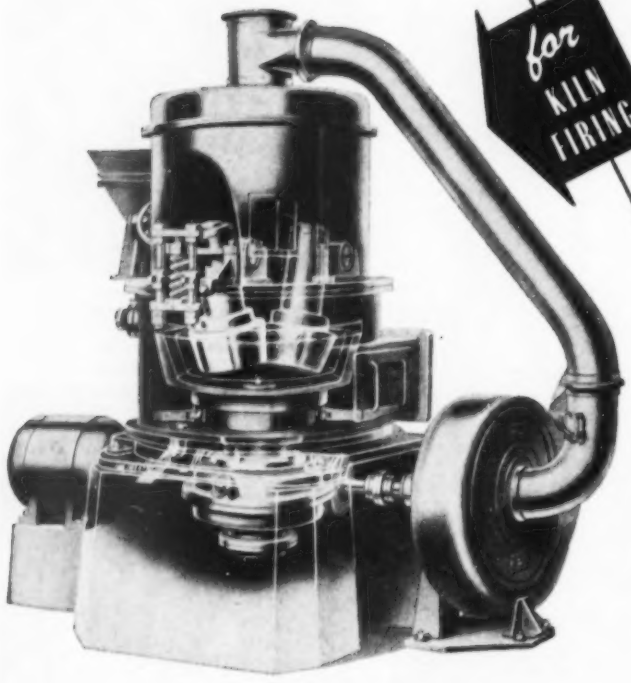

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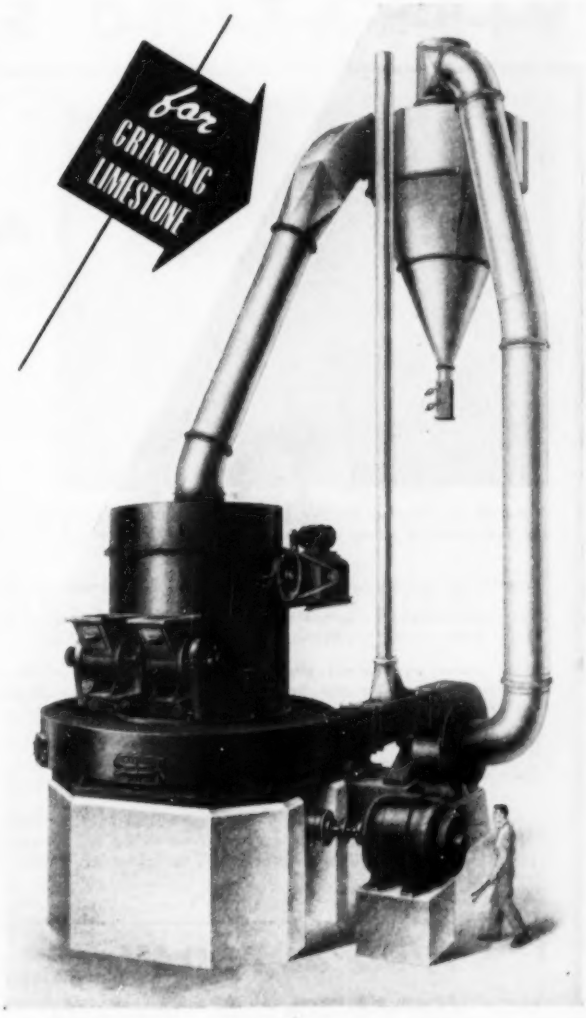

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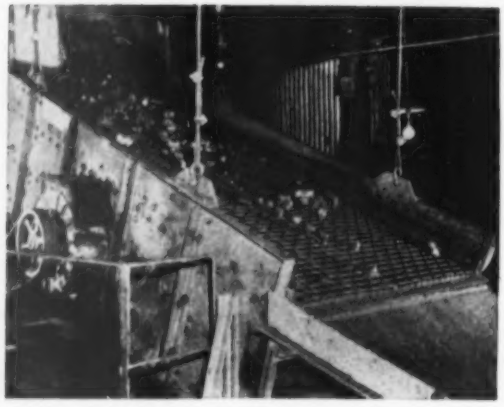

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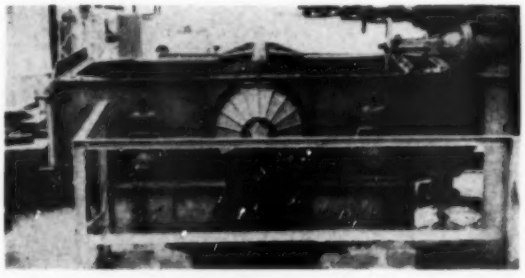

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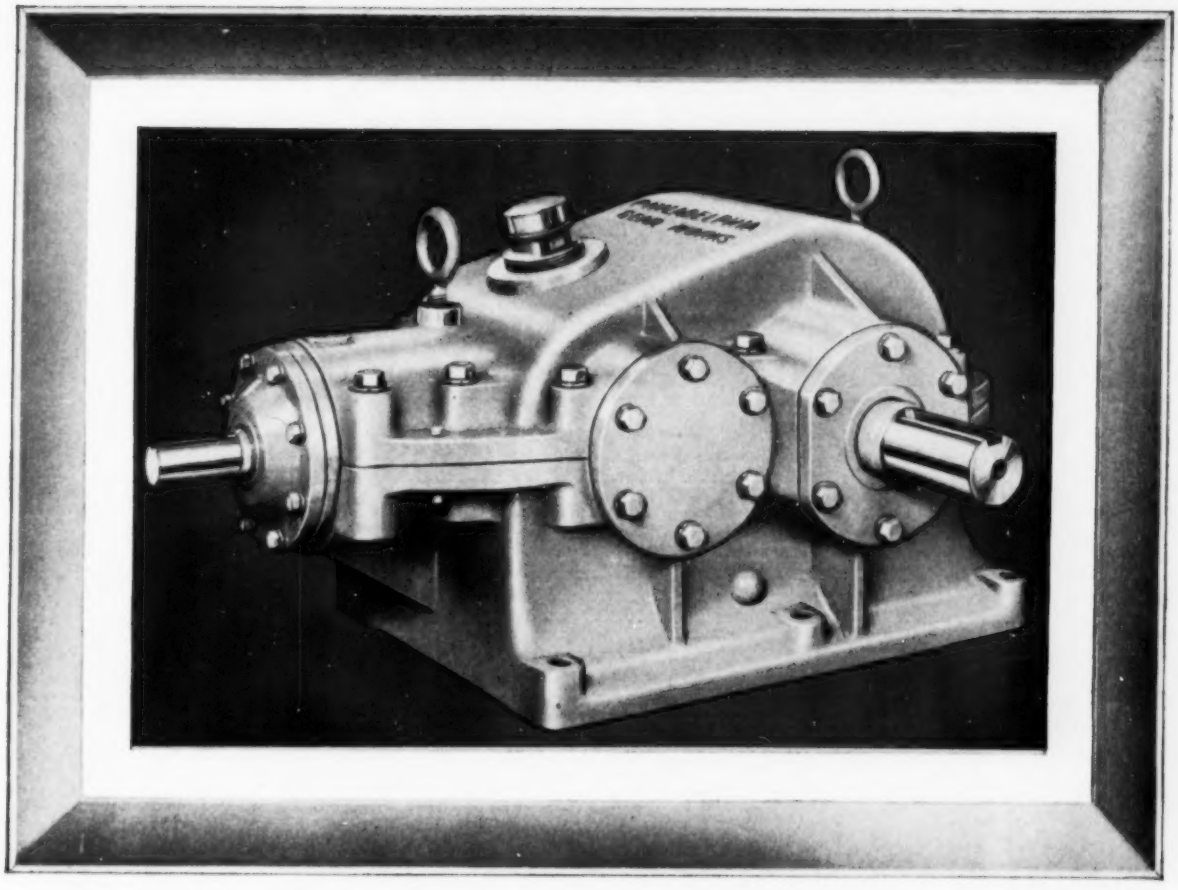

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Some Problems Associated With Compressor Lubrication

Part 1

By G. W. FERGUSON
Technical and Research Division
The Texas Company
New York, N.Y.

COMPRESSORS are used in so many different applications that they may well be judged as one of industry's most useful tools. The advancement of their use has been so closely allied with industrial progress that further expansion in compressor applications appears to be without limit. In order to keep pace with industrial development it has been necessary to increase the output of these machines by increasing their size and horsepower as well as the pressure and speed at which they operate. These improvements have not only been made for compressors handling air but for a wide variety of gases used in refrigeration, refinery operations, chemical processes, gas transmission, and the rapidly expanding petrochemical industry. There is also a trend to incorporate automatic pushbutton devices to improve control and reduce the necessity of proper lubrication to insure satisfactory operation. This not only requires the careful selection of lubricants to meet the specific needs of the compressor and its allied equipment, but care must be exercised to assure that the lubricants reach the friction surfaces free of contaminants and in the proper amount.

Early compressors were lubricated by drip feed cups filled with animal oils such as sperm oil. These oils oxidize readily and decompose under high temperatures, forming varnish-like or gummy deposits. High-pressure compression with its attendant high temperatures was not commercially successful until after petroleum became readily available in 1862. The first petroleum oils were superior to fatty oils as lubricants but were paraffinics high in carbon residue and still left excessive carbonaceous deposits. It was not until 1900 that the low-carbon residue Gulf Coast and California naphthene crudes became available. Because of the reputation and established characteristics of paraffin base oils which make them suitable for many applications, it was many years before the ability of the newer naphthene oils to keep air compressor valves much cleaner was fully appreciated.

One of the first differences noted between the fatty oils and the new petroleum lubricants was that while the animal and vegetable oils would emulsify or mix with water and lubricate under wet conditions, the mineral oils would not. It was soon found, however, that a few percent of fatty oil added to petroleum oils made them emulsifiable. Such oils, commonly referred to as compounded oils, may be used for cylinder lubrication when the air or gas contains a high percentage of moisture or condensable liquid.

In the late 1930's it was discovered that the addition of certain oil-soluble soaps to straight mineral oils improved their detergent or cleansing properties. This development was accompanied by the incorporation of many different types of additive agents in lubricating oils, such as oxidation and rust inhibitors, pour point depressants, viscosity index improvers, and antifoam agents used to improve the performance of the oil in certain machines, including compressors in their varied applications. Synthetic oils are being used in recent specialized applications where certain performance characteristics can not be attained by the use of naturally occurring petroleum material. Although their use has been relatively limited, synthetic lubricants will possibly enter the lubrication picture as further improvements are made and more knowledge is gained as to their performance characteristics.

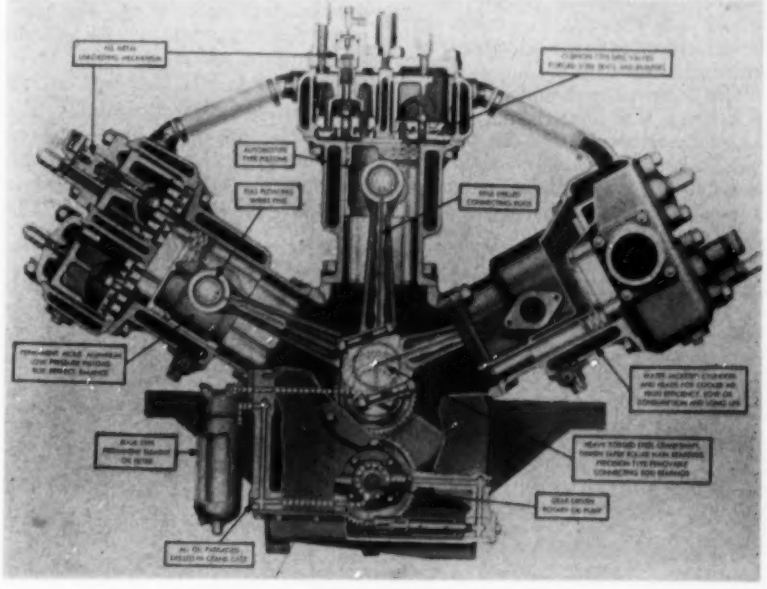
COMPRESSOR TYPES

Compressors are generally classified into three principal types: (1) reciprocating piston compressors, comprising the conventional piston and cylinder, a crank mechanism to impart reciprocating motion to the piston, and valves to control admission and discharge of air; (2) rotary compressors in which compression is effected by the positive displacement of rotating elements; and (3) centrifugal or turbo compressors in which the air or gas is compressed by the dynamic action of rotating vanes or impellers.

FUNCTION OF A COMPRESSOR LUBRICANT

Proper lubrication is essential to the satisfactory functioning of the various sliding and rotating parts of these machines. The most important function of a lubricant is to reduce friction and minimize wear of the working parts. The lubricant must also provide an adequate piston ring and packing seal to prevent the es-

Figure 1 — Sectional view of a two-stage compressor unit. Note features of the pressure lubricating system.



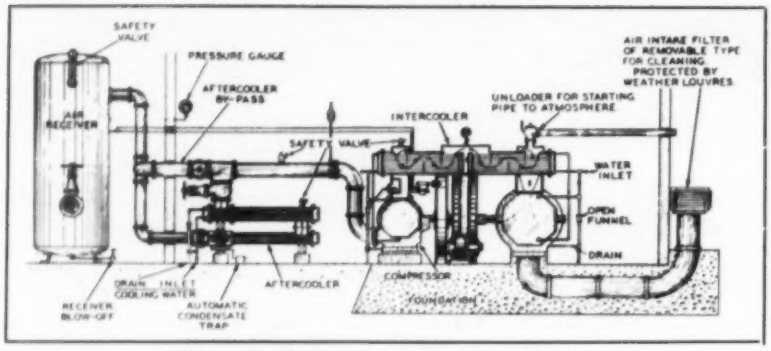


Figure 2 — Reciprocating compressor installation.

cape of gas and to serve as a heat transfer medium. Valves must be lubricated without impairing their action by the formation of carbon. Bearings must be lubricated and proteced against corrosion with minimum friction. In some applications the lubricants must also provide protection against rusting. Before discussing the selection of lubricants to perform these important functions, it would be well to present some of the factors which must be considered in the problems associated with compressor lubrication.

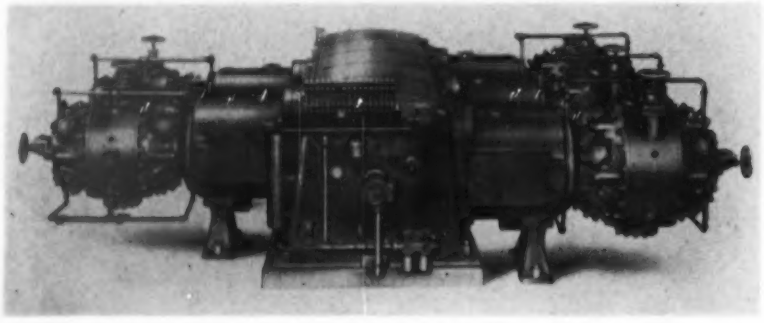
ADEQUATE INSTALLATION

Many problems which might be encountered in the operation and lubrication of compressors may be solved before they occur by giving careful attention to the proper installation of the compressor and providing for the necessary auxiliary equipment. This is not so much a factor with portable self-contained units as for stationary installations. The compressor manufacturer usually provides this type of equipment; however, the customer must furnish complete information on the compressor requirements to enable the manufacturer to make adequate recommendations.

The compressor should be located in a clean, well-lighted area of sufficient size to permit cleaning, inspection, and any dismantling which may be required. The foundation should be well designed to avoid transmission of vibration and alignment difficulties. If the unit is an air compressor, the air intake should be carefully located and equipped with an efficient filter of adequate size to prevent contamination by moisture, dust, smoke, fumes, and paint, or other air-borne materials which will accelerate deposit formation and wear of parts regardless of the type of lubricant used. The air intake should be of adequate size and as short and direct as possible, and the filter should be located to permit ease of cleaning. In some installations it is desirable to install a simple manometer gauge on the intake pipe to determine when the filter requires attention. Where necessary, provisions should be made for surge chambers, knock-out drums, intercoolers, aftercoolers, scrubbers, moisture and oil traps, and related equipment to assure that the gas entering or leaving the compressor is properly cooled and as clean and dry as possible.

All piping should be carefully arranged to avoid unnecessary pockets in which oil and moisture may accumulate, and suitable traps or drain valves should be installed. The piping to the compressor should be well supported to relieve the compressor of incidental stress, as well as to avoid possible misalignment of cylinders. The discharge pipe and receiver or surge chamber should be of sufficient size to minimize vibration, and each should be equipped with traps or drains. Safety valves should be located in accordance with good engineering practice, and provision should be made for the installation of necessary temperature and pressure indicating and regulating devices.

Figure 3 — Mechanical lubricator installation on horizontally opposed compressor unit.



An adequate supply of cooling water for cylinder jackets, cylinder heads, intercoolers and aftercoolers must be provided and temperatures regulated in accordance with manufacturer's instructions. The coldest water should normally be passed through the intercooler first and then to the cylinders, to avoid condensation on the cylinder walls.

The compressor and related driving equipment must be carefully aligned to avoid uneven wear and possible malfunction. All piping, valves, and accessory equipment must be thoroughly cleaned before installation. Pipe which has been welded or threaded always has some metal chips or welding slugs inside. If metal pieces, pipe scale, dirt and all foreign material are not carefully removed, they will be loosened by the flow of air or gas or liquid and will cause serious damage. It is necessary that a thorough study be carried out to insure adequate installation in order to avoid operation and lubrication problems.

Break-In The starting up and break-in of a compressor is a very critical period; and if it is not carried out properly, serious damage may be encountered. Manufacturer's instructions should be carefully followed, and the unit should be thoroughly cleaned and inspected. Pistons, rings, cylinders, rod packing, bearings, and piston rod should be well covered with oil during assembly, and the crankcase and cylinder lubricators should be filled with the proper oil. The lubricator lines should be primed with oil and then disconnected at the point of application to insure that an adequate supply of oil is available. During the initial run-in period, the unit should be watched very closely to determine whether any sign of overheating or other distress appears. All moving parts should be checked to see that they are properly lubricated, and any excessive heating should be investigated.

The break-in period usually involves relatively short runs at gradually increasing speeds and loads, accompanied by frequent inspections to assure that dirt, metal chips, foreign particles, and water leaks are not being encountered. The oil around the packing glands, piston rods, and valve chamber pockets

should be inspected for any signs of finely divided metallic particles. The time when the oil has become absolutely clean and free of particles may serve as a guide that the packing is ready to seal against full pressure and that the rings are seated in the cylinders. The compressor should not be considered fully broken-in until it can pull full load and pressure.

Wear and Over-Lubrication One of the biggest problems encountered in compressor lubrication is that the operator, upon observing wear, increases the amount of oil fed to the compressor cylinders. This problem is particularly applicable to air compressors, where over-lubrication may result in both excessive carbonization of the discharge valves and increased discharge temperatures.

Wear is not ordinarily a problem in compressor lubrication, provided that the oil and air are kept clean. Extensive investigations have indicated that excessive wear is generally associated with contamination of the intake air in the form of dirt, pipe scale, welding beads, rust particles, entrained moisture, and condensation, and that it is seldom due to insufficient lubrication. Misalignment, improper piston and ring clearances, and inadequate cooling will also cause increased wear.

During the break-in process it is desirable to use a liberal quantity of oil until the rings are well seated and the cylinders are glazed. However, when the unit is ready to pull full load, the amount of oil should be reduced to the minimum required for satisfactory lubrication. Because of the many variables involving the size and speed of the compressor, the condition of the pistons, rings, and cylinder walls, the viscosity of the oil, and whether the compressor is fed by splash from the crankcase, injected into the intake air, or by a separate force-feed lubricator, it is inadvisable to establish any hard and fast rule as to the theoretically proper amount of oil that should be supplied to a cylinder. As a starting point to determine the proper feed rate, the lubricator should be set to deliver one drop of oil per cylinder per minute for every 1,000 sq. ft. of cylinder surface swept per minute. The amount of oil used should approximate 1/10 pint per 10 hours per 1,000 sq. ft. of cylinder surface swept per minute.

After running the unit a few hours, pull one of the discharge valves and observe the interior surface of the cylinder. It should feel oily at the top, but there should be no evidence of excess oil on the piston or in the discharge passages. Reset the lubricator until examination of the cylinder reveals a satisfactory condition. Once this is determined, measure the actual amount of oil consumed and use this as a basis for keeping the oil feed rate in line; supplement this by occasional inspections of the cylinders. The amount of oil fed to the piston rod packing should be similarly reduced until the rod shows a thin, continuous film and no excess oil coming from the packing vent or accumulating in the cylinder yokes.

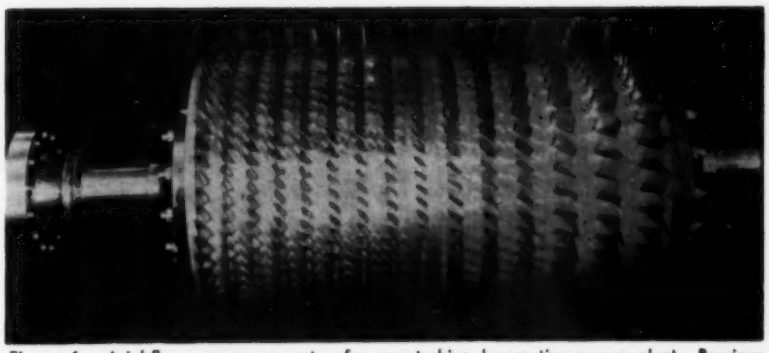
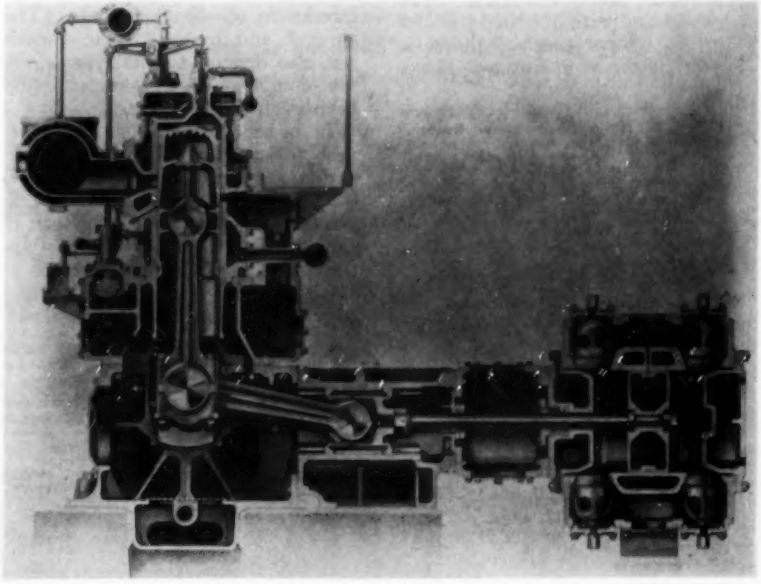


Figure 4 — Axial-flow compressor rotor for gas turbine locomotive power plant. Bearings lubricated from pressure system.

Force-feed lubricators and lines should be cleaned and inspected at periodic intervals to insure that the correct amount of clean oil reaches the lubrication points. Where liquid-type sight-feed lubricators are used, the drops of oil will carry over a trace of the sight glass fluid into the cylinders, making it necessary to replenish the liquid every few months. The rate of carryover is relatively low for straight mineral oils where water or mixtures of water and glycerine are used; however, some additive-type oils containing detergent or dispersant components may carry over all the sight glass liquid in a matter of days. The displacement of the sight-feed liquid by the oil does not affect the oil feed rate but does finally make is impossible to observe the number of drops being fed. Such a problem is not difficult to solve, however, as lubricator solutions have been found which will provide the desired performance for particular additive oils. Unfortunately, no one lubricator solution has yet been found that will be satisfactory for all types of additive oils.

In the splash system the oil in the crankcase is splashed by a scoop on the ends of the connecting rods onto the bearings and cylinders. The amount of splash can be regulated by varying the length of the scoop or the oil level. The oil level should be checked daily and oil added or drained off as necessary. Too low an oil level may cause lubrication failure. Too high an oil level may

Figure 5 — Sectional view of gas-engine-driven compressor unit.



cause foaming and high oil consumption. Oil control rings in single-acting splash-lubricated compressors should be maintained in satisfactory condition to prevent excessive oil consumption.

Deposits Another important problem that may be encountered in compressor lubrication is the formation of deposits. Perhaps the most objectionable place for deposits to form is on the discharge valves, where they can impair the valve action and result in excessive discharge temperatures. Deposits in intercoolers, aftercoolers, pistons, and crankcase may also reduce the efficiency of the unit. The formation of these deposits may be caused by several of the following factors:

1. Excessive discharge temperatures.
2. Excessive oil consumption.
3. Dirt, rust, pipe scale, etc.
4. Gas contamination.
5. Unstable gases.
6. Reaction between gas and lubricating oil.
7. Water contamination.
8. Wrong kind of oil.

As there are an infinite number of conditions where deposits may be formed in gas compressors, the following discussion will be limited to air compressor valve deposits.

The intake valve of an air compressor normally does not present a lubrication problem since it is kept cool by the incoming air; however, even in the best regulated compressors, carbon may deposit on the discharge valve. Since it is located in the discharge air stream, the discharge valve will be at the temperature of the compressed air. Disregarding the cooling effect of the jacket water and the heating effect of friction and wire drawing, the discharge air temperature will theoretically reach the temperatures shown in Table I.

Table I—Air Comp. Discharge Temp.

Comp. Gauge Pressure, p.s.i.	Approx. Compression Temperature °F	
	Sgle. Stage	Dbl. Stage
50	350	210
100	500	250
200	...	310
300	...	350

In a well cooled compressor the discharge temperatures will be under these values; however, discharge valve leaks or higher-than-normal intake temperatures will result in values above the theoretical. One of the easiest ways to form a carbonaceous deposit is to spread a thin film of oil on a hot surface in the presence of air; this is exactly the condition existing at the discharge valve of an air compressor. Excessive quantities of lubricating oil and contaminating materials in the intake air stream will greatly accelerate the formation of these deposits. The amount and nature of the deposit will also depend on the type of oil, the compression temperature, and the design of the valve.

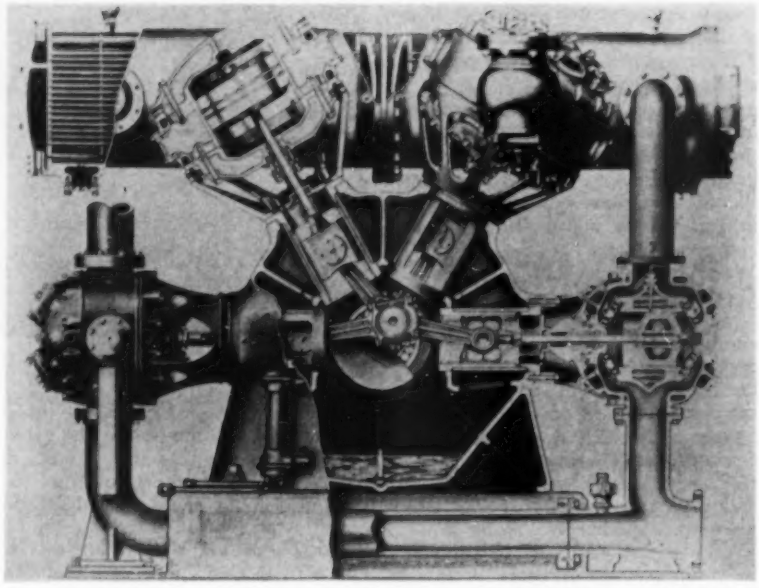


Figure 6 — Semi-radial reciprocating two-stage compressor. Cylinders are lubricated by mechanical lubricator and all bearings are under oil pressure from gear-type pump located in crankcase.

In order to determine the effect that various type oils may have on carbon formation, five different types of commercial oils were evaluated in a series of laboratory tests[1]. Each of the oils selected had a viscosity of approximately 300 Saybolt Seconds at 100 deg. F. Their composition and physical tests are shown in Table II.

[1]*Compressor Lubrication*, by K. L. Hollister. *Lubrication Engineering*, August, 1950, pp. 158-160.

Table II—Composition and Iden. Tests

Type of Oil	Viscosity, SSU at 100° F. ASTM D-88	Gravity, °API ASTM D-287	Saponification Number ASTM D-94	Ash, % ASTM D-482
Inhibited naphthene	306	23.1	0.03	0.00
Straight naphthene	306	23.1	0.03	0.00
Compounded naphthene (3%)	293	23.1	6.50	0.01
Detergent paraffin	345	27.5	1.60	0.24
Straight paraffin	323	29.3	0.03	0.00

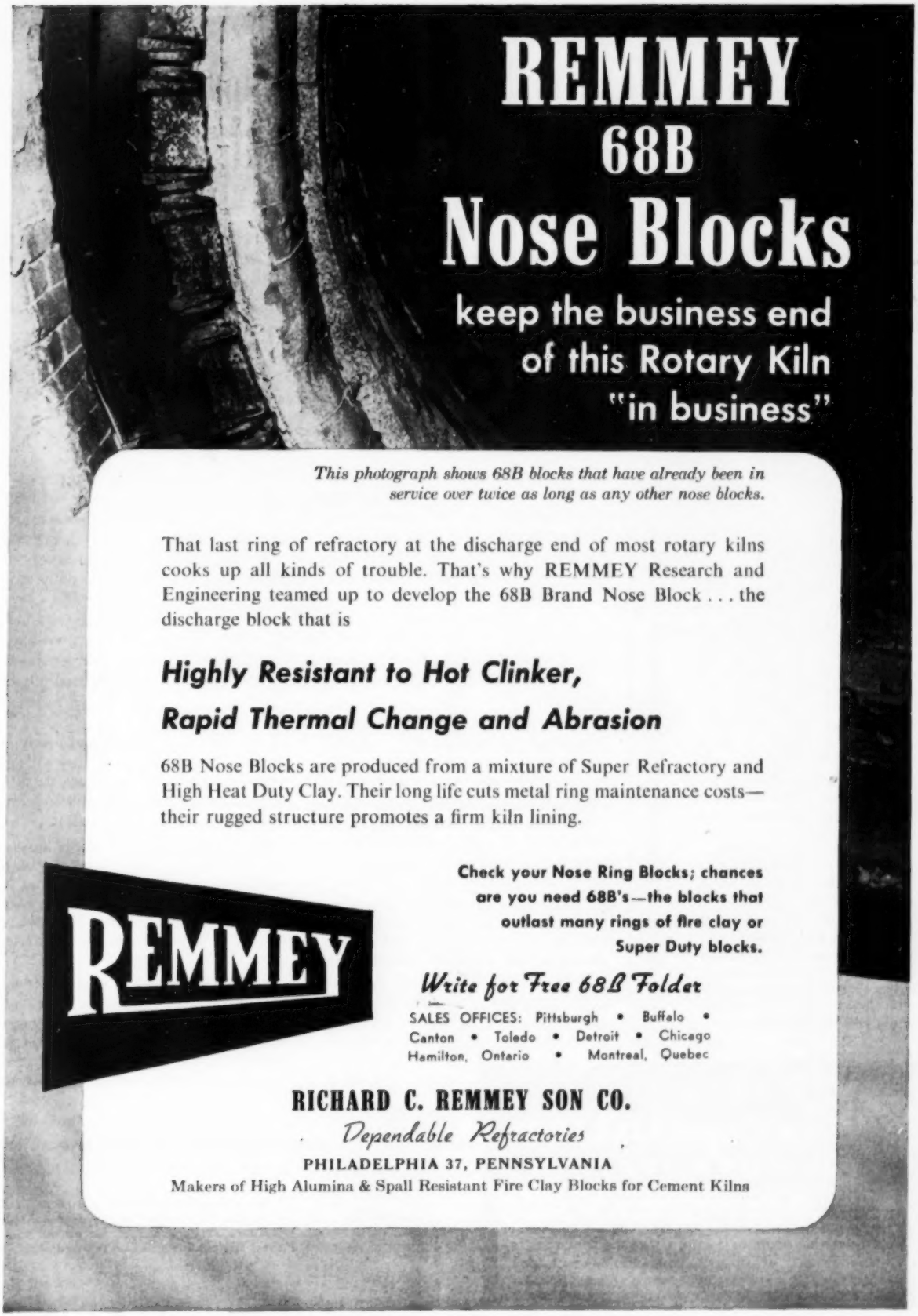
The results of these laboratory tests are shown in Table III and the oils are listed on the basis of their service performance.

It will be noted that neither the oxidation resistance nor the carbon residue tests evaluated the oils in the order of their service ratings. Therefore a special test was set up in which the oil was exposed in a thin film on an iron plate for 24 hours at various temperatures, and the percent residue was determined. This thin film residue test checked very well with service experience. A similar correlation may be drawn between the thin film residue test and the evaporation rate, as it will be seen that the oils having the greatest evaporation rate exhibit the lowest

(*Continued on page* 159)

Table III—Carbon Formation Indicators

Type of Oil	Service Performance Rating	Oxidation Resistance Rating	Carbon Residue, % ASTM D-189	Flash Point COC, °F ASTM D-92	Evaporation Rate Oz/sq.ft/hr. at °F.			Thin Film Residue, % at °F.		
					250	350	450	250	350	450
Inhibited naphthene	1	1	0.02	385	.020	.026	.096	19	5	4
Straight Naphthene	2	4	0.01	380	.016	.031	.076	14	9	6
Compounded naphthene	3	5	0.03	395	.020	.031	.076	16	10	10
Detergent paraffin	4	2	0.37	435	.006	.010	.043	37	16	10
Straight paraffin	5	3	0.01	440	.003	.006	.036	37	22	13



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If you use filter systems...

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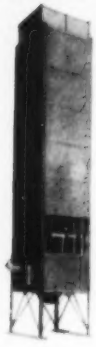

No pressure surges!
No filter choking!
Efficiencies up to 99.99%!

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▸ **UNIFORMLY HIGH EFFICIENCIES** — as high as 99.99% under actual field conditions — are maintained by the constantly-cleaned filter surfaces. There is no "choking" action — no variation in filter efficiency as dust accumulates!

▸ **LONGER FILTER LIFE** is obtained because the filter fabric is not subjected to destructive jarring, rapping and vibration of conventional filter cleaning methods. The Dualaire cleaning action is gentle — yet far more effective!

▸ **LESS EQUIPMENT IS REQUIRED** to handle a given capacity with the Dualaire because no standby sections need be provided for gas cleaning while other sections are shut off for rapping. The Dualaire filter is kept constantly clean — automatically — while it is filtering out the suspensions. The gas is filtered and the dust removed simultaneously — without interruption. Saves space, simplifies installation!

▸ **MAXIMUM ADAPTABILITY** to varying installation requirements is assured by the "sectionalized" design of the Dualaire. Each section is available in 5 different heights — and as many sections can be bolted together as desired to meet plant requirements. As needs increase, simply add more sections!

▸ **EFFICIENT STRAIGHT-THRU DESIGN** of filter tubes assures easier dust recovery, better flow. Dirty gas enters top of tube, is filtered through the walls, and dust drops by gravity through bottom of tube into collection chamber. Separated material does not re-entrain in the gas flow.

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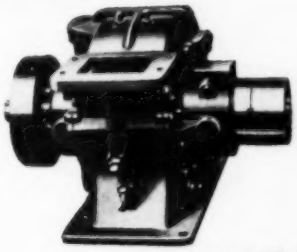
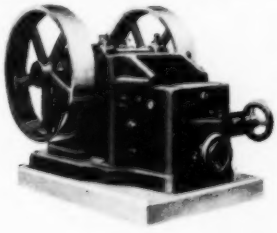


LABORATORY SWING-SLEDGE MILLS

Capable of reducing soft, moderately hard and tough or fibrous materials to any degree of fineness between 1 in. and 20 mesh. The patented "Open-Door" feature permits ready accessibility for cleaning.



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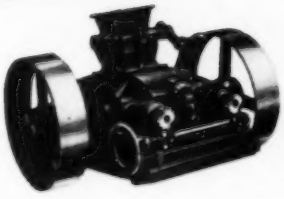
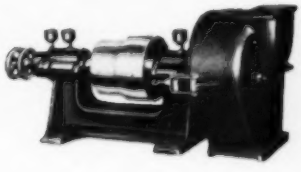
Special Roll Jaw action simplifies close regulation of the product with capacities varying from 300 to 400 lbs. per hour at finest settings, to 1000 or 2000 lbs. when opened for coarser work. Each part of the crusher is accessible for quick and easy cleaning.



LABORATORY CRUSHING ROLLS

First designed especially for laboratory sampling work, Sturtevant Crushing Rolls are used regularly in many plants where there are limited out-puts. Range of output for the 8 x 5 size is from ½ in. to 20 mesh — and for the 12 x 12 size from ¾ in. to 20 mesh.



LABORATORY SAMPLE GRINDER

Laboratory Sample Grinders are of the "Open-Door" disc type and are capable of very fine work, producing products as fine as 100 mesh (coarser if desired) when working on dry, friable, soft or moderately hard materials. Simply turn hand wheel to provide product regulation from 10 to 100 mesh.

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3. DU PONT PELLETOL NO. 1 is poured into hole to provide extra energy where toe conditions are difficult. It has unlimited water resistance...sinks readily...fills space between "Nitramon" cans and wall of holes.

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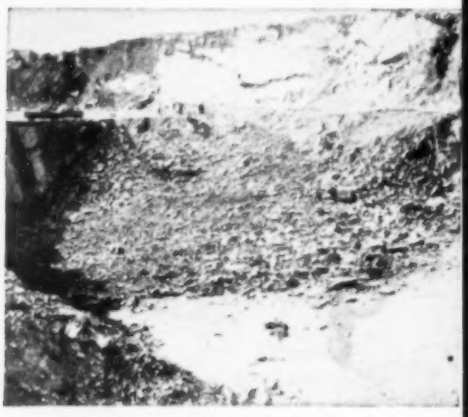

6. SUPERIOR FRAGMENTATION is typical result of shot made with this Du Pont "blasting team." It's a "team" that combines to provide maximum safety without decreasing efficiency.

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C. W. CHANDLER, President, Chandler Materials Company, Tulsa, Okla., is another in the growing list of Murphy Diesel owners who has proved the truth of the reports of other rock operators on the operating economy and dependability of Murphy Diesels. Mr. Chandler decided to find out about Murphy Diesels for himself about a year ago. He put a Model 11, rated at 100 H.P., continuous, 110 H.P. intermittent, on his Rogers 20x36 primary at Garnett, Okla. He now reports he is producing 100 tons per hour at a 3" setting and consuming only about two gallons of fuel doing it.

Reports like this come from wherever Murphy Diesels are used to power rock crushers. But there is only one way to find out for yourself—Put a Murphy Diesel on your job. Call your Murphy Diesel Dealer—he'll be glad to give you full information. Or, write direct.

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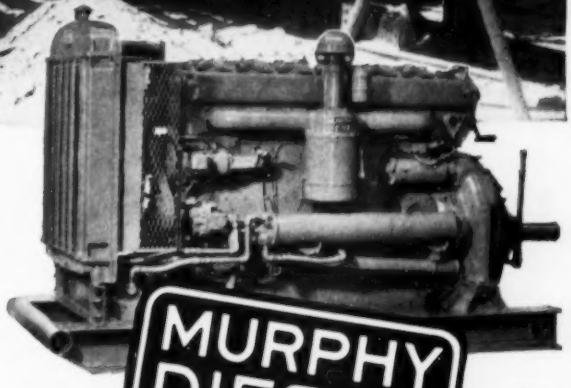

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Heavy duty power
for rock crushing

Murphy Diesel Engines and Power Units are available in sizes from 90 to 240 H.P. Engine speeds are 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 60 to 154 K.W.

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Three MARION 93-M Diesel shovels working in asbestos pits of the Canadian Johns-Manville Company, Ltd., in northern Ontario get a real workout.

They are on around-the-clock schedules in land where the mercury can drop to 60 below. The digging is all solid rock.

Two of these diesel shovels load out waste rock on both sides of the fiber-laden serpentine rock which the third machine digs. Despite the rigors of weather and terrain, each MARION turns in impressive tonnage records.

The details about 93-M strength, power and stamina to handle big assignments may point the way to a happy solution of some excavating problem for you. Why not ask your nearest MARION representative today about 93-M Diesel and Ward-Leonard electric machines?

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BULLDOZERS IN UNIQUE TWO-LEVEL PIT SUPPLY MATERIAL TO CALIFORNIA PLANT

WHEN Robert J. Noble, southern California contractor and roadbuilder, decided four years ago to produce his own aggregates and to erect a modern hot-mix asphalt plant, he selected equipment of compact and efficient design. He purchased a Cedarapids Master Tandem portable crushing and screening plant and a Standard Steel Corporation 4,000-lb. hot plant. Both plants were intended as permanent installations; but they can readily be moved to another location, should this ever be desired. The capacities of each plant was about 150 t.p.h. They are located on the banks of the Santa Ana River, near Olive, Calif.

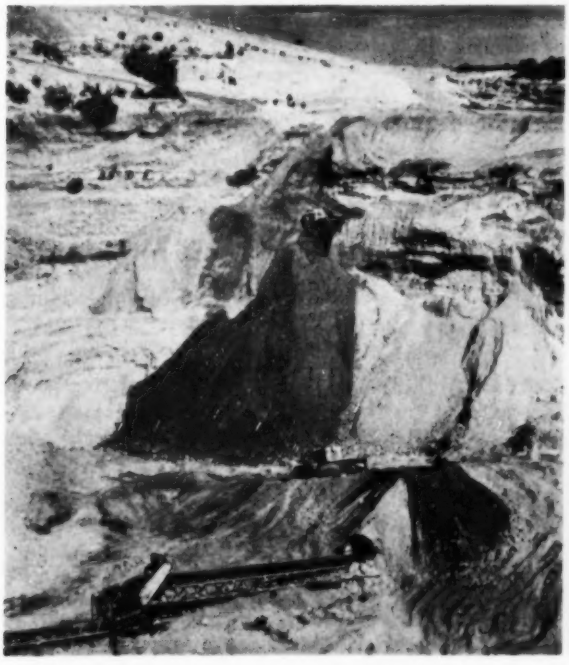
When these plants were described in the August, 1951, issue of PIT AND QUARRY, the sand and gravel was obtained from the river bed by ordinary means. Now, after four years of steady operation, the pit has been excavated to a depth of about 125 ft. and an unusual system has been developed using benches to enable two Caterpillar D8 tractors with Caterpillar U8 bulldozers to work in relays on the lower and intermediate levels. One tractor pushes the material over a bank at the intermediate level, and the other tractor on the lower level pushes the material to a hopper over a short feed tunnel. A reciprocating feeder puts the material on the first of four flights of the 24-in. by 600-ft. pit-to-plant conveyor system. The belt is rather steeply inclined (3.6) but not so steep as to cause any noticeable roll-back. Each of the four separate conveyor flights is separately powered, c/c lengths and motor hp. from bottom to top being as follows: 90 ft. (20 hp.); 150 ft. (20 hp.); 275 ft. (40 hp.); and 85 ft. (15 hp.).

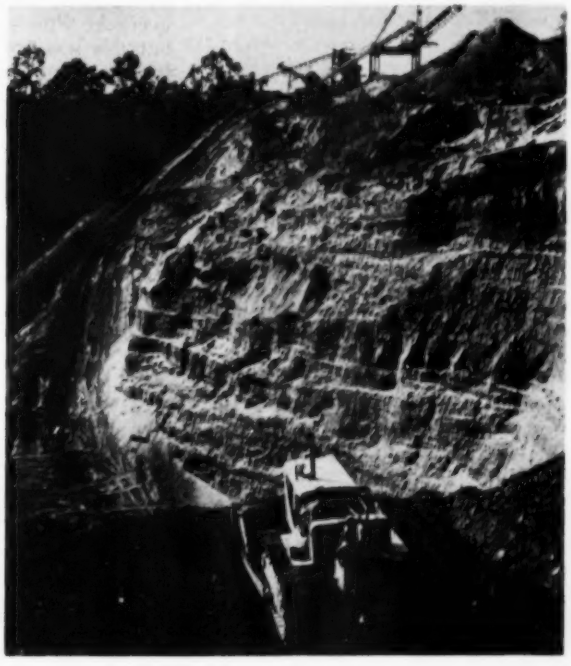
The sand and gravel plant is essentially unchanged except for the addition of a 17-in. dia. Wemco spiral sand machine, and a 100-ft.-belt radial stacker which supplements the three original smaller stocker belts. Output now runs as high as 200 t.p.h., and is confined to material for the hot plant, plus untreated rock surfacing which meets California specifications for this type of material. C. Kellar is superintendent of these operations.

The conveyor structures, the feeder, and the new radial stacker at the plant were all fabricated by the Noble Company (a relative) of Oakland, Calif. Cedarapids rolls and idlers and Goodyear conveyor belting are used.

The R. J. Noble Company engages in street and highway paving and maintenance work throughout Orange County. Besides producing and processing its material, the company also operates its own grading, spreading, and rolling equipment.

● Two views of the Noble pit on the Santa Ana River near Olive, Calif. Left: A shot which shows the two working levels, with one tractor-bulldozer (center) pushing material over the bank at the upper level and a second (on the lower level) dozing it to a hopper over a feed tunnel. Right: A view taken from the position of the unit at the upper level, showing the conveyors and the plant at the rim of the gravel pit.





$2,000,000 Facilities Planned By Venezuelan Cement Firm

It has been reported that Venezuelan interests have organized a firm which plans to build a cement plant at Chichiriviche Bay, State of Falcon, western Venezuela. The $2,000,000 operation would mean a plant with a daily capacity of 10,000 bags, to supply the market in western Venezuela and possibly the Netherlands West Indies.

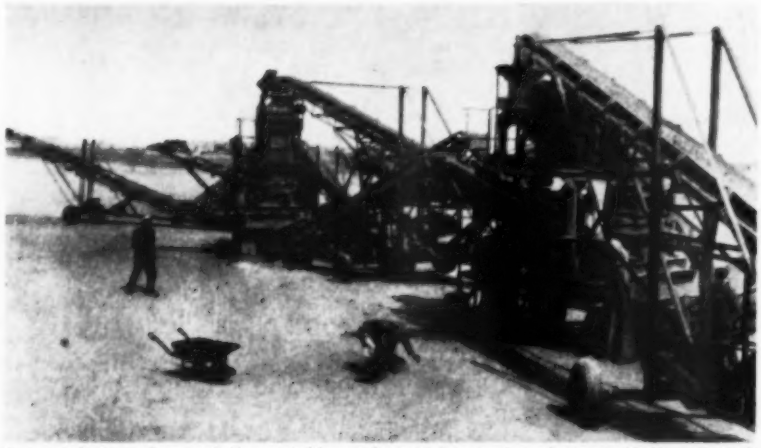
European machinery reportedly has been ordered for the plant, which is scheduled to be completed by the end of this year.

According to local press notices, the Ohio River Sand and Gravel Corporation, Parkersburg, W. Va., has purchased Grape Island and Bat Island in the Ohio River. Combined area of the two islands, which are in Pleasants County, is 145 acres. Due to river silt deposits, the two aits have been connected and are actually one island. Purchase price was reported to have been approximately $60,000.

British Crushing and Screening Plant Serves Oil-Rich Middle Eastern Area

PROBABLY THE MOST enterprising development and construction project to be found in the Middle East today is taking place at the oil town of Al Kuwait, at the head of the Persian Gulf between

By JOHN GRINDROD
B.A. (Com.)



A general view of one of the portable crushing and screening plants at Al Kuwait which are supplying aggregates from desert gravel during the construction of permanent facilities.

Iraq and Saudi Arabia. With the recent rapid expansion of the Burgan oilfield by the Kuwait Oil Company, a joint British-American enterprise, Kuwait has, almost overnight, become the richest country in the world for its size. Under a new agreement reached in 1951 between its ruler, His Highness the Shaikh Sir Abdulla As Salim As Subah, K.C.M.G., C.I.E., and the oil company, the former became personally entitled to an equal share of the company's profits. He is devoting this annual income of many millions of pounds from oil royalties to improving the living conditions of his people.

This improvement project necessarily involves building houses for the people who would put the plan into operation. Tenders were called for machinery to produce aggregates for building purposes. The natural resources provided only sand of a type of little use for building purposes. It was necessary, therefore, to reduce the natural desert gravel by crushing to a range of sizes from 1½ in. down to sand plus 50-mesh. As the capacity of the required plant was specified at 250 t.p.h., it meant a very large installation. Moreover, a very large stockpile of material must be available upon the completion of the plant.

In the meantime arrangements had to be made for some progress at the site, if only in a small way. Several portable plants were designed, and Pegson Limited, of Coalville, Leicestershire, England, were entrusted with the initial order. Delivery in three months was offered, but this was not good enough. By special arrangement and by working through holiday periods, the pilot plants were put up at the quayside at the British port in less than six weeks. These plants have now been working satisfactorily for the last eight months.

During this time the order for the main plant had also been placed with Pegsons. Delivery was effected within the specified time of 12 months, and the plant is now being erected in Kuwait.

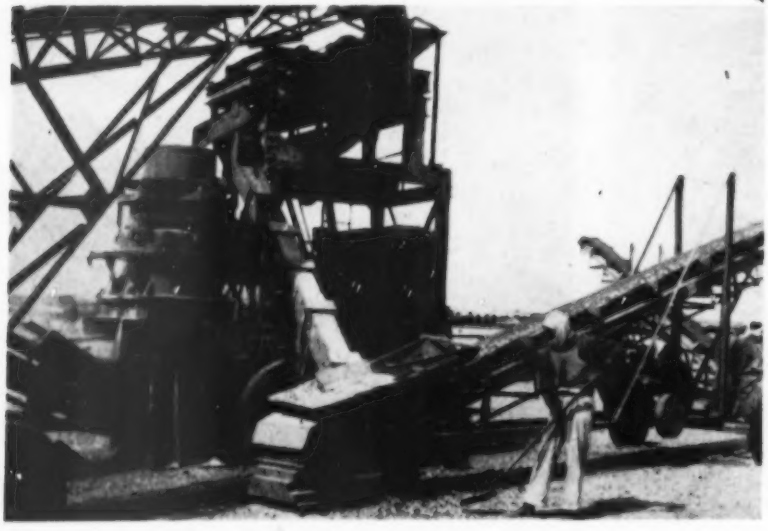
Designed for 250-t.p.h. capacity, as previously mentioned, the main plant is divided into two identical sections, each of which will have a capacity of 125 t.p.h. The raw material is 3 in. down to ⅛ in. desert gravel, which is deposited in stockpiles near the plant.

A 30-in. underground conveyor under the stockpiles delivers the raw material to the two receiving hoppers of the main plant. The material is first taken to a pre-selecting screen, where the plus 1½-in. to 3-in. material is extracted and passed to a 30-in. by 6-in. crusher for reduction to minus 1½-in. size. This crushed material, together with the minus 1½ from the selecting screen passes forward on a conveyor to the main selecting screens. The screened material in sizes minus ⅛ in., ⅛ to ⅜ in., ⅜ to ¾ in., and ¾ to 1½ in., falls into bins located under the screens. Further reductions of the ¾- to 1½-in. sizes can be made as desired by means of 36-in. Gyraspheres, which take their feed from the ¾- and 1½-in. bins, and pass the re-crushed material on to a conveyor and return for re-screening.

For the production of extra sand,

(Continued on page 159)

A closeup view of a crusher, screen, and drive at one of the portable plants.



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Strip Mining

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THE CABLE...

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Ability to withstand extreme mechanical abuse and electrical stress is vital for long operational life in portable cables for shovels and drag lines. Hazacord Type SH-D Portable Cable combines the greatest electrical safety with maximum mechanical strength for long life and minimum outage in installations up to 15,000 volts.

Hazacord SH-D cables are protected by the mold-cured Hazaprene ZBF sheath with tire-tread toughness for extra mechanical strength. The copper shielding braid over each conductor, when properly grounded, equalizes electrical stresses and drains off all capacity-charging currents, insuring safety in handling. Grounding conductors in the interstices contact the copper shielding braid, providing an adequate low resistance ground for the equipment.

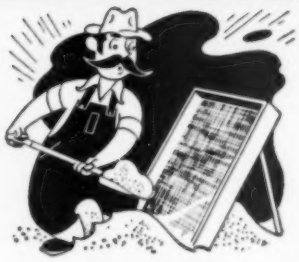
For information on this widely used design or on other portable cables, consult your Hazard representative or write Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pa.

HAZARD

insulated cables

2137

Screenings



by William M. Avery

TWO apparently unrelated items connected with safety have just drifted our way, and after a brief, unsuccessful try at manufacturing a common denominator, we decided to pitch them without frills.

The first exhibit involves a gala celebration at which Kansas City Quarries Company rewarded 25 of its truck drivers for accident-free navigation by presenting each individual with a pair of trousers. It seems the company has a policy of

rewarding a driver with the gift of a portion of his uniform after each 4-month period of safe driving. The system is graduated, starting out with a cap after 4 months, a shirt after 8 months, and culminating with trousers after a full year.

We're firm advocates of the practice of encouraging safety by means of incentive systems, but the Kansas City Quarries' technique strikes us as being just a little bit extreme, and we'd like to suggest a modification. Instead of requiring a driver to go around without trousers for a whole year, we lean toward the notion of letting him start the year with a full uniform, requiring simply that he turn in his cap after the first accident, his shirt after the second, and his trousers after the third. After one or two experiences with being detrousered in January, we think even the most confirmed hot-rod maniac would either start taking it easy or succumb to pneumonia.

Our other exhibit involves a couple of fellows named Sam Clyburn and John Forgey, both of whom are employed as watchmen for the Union Sand & Gravel Company at Huntington, W. Va. Last December 14 Sam slipped from one of the company's barges and wound up in the icy Ohio River. John fished him out. Just a month later John slipped and fell into the drink and Sam pulled *him* out. We understand that during warm weather the boys go through this routine once a week.

Wheels of Progress

PIT AND QUARRY'S main offices were moved a couple of years ago, and like everyone who has had this experience, we've had the devil's own time of it to get all our correspondents switched over to using the new address. We recently had occasion to remind the publications department of International Minerals & Chemical Corp. that they were still sending material to us at the old address, and like a flash they sent back a postcard bearing the following verse:

Faces are red
Feelings are blue
Because of the cost
We put upon you

Our intentions were good
But the printer did wrong
And even the U.S.P.O.
Went along

So with eyes downward cast
And attitude humble
We hope you'll forgive
Our mailing list bumble

Inevitably, of course, this, too, was sent to our old address.

Same Old Story

ACCORDING to a news story in a recent issue of the *Consolidated Rock News,* ready-mixed-concrete trucks from the Tucson Rock & Sand Co., Tucson, Ariz., were pressed into service as fire engines in order to save a neighboring house which was threatened with destruction by fire. Five of the company's trucks formed a shuttle system to maintain a steady flow of water until the fire was brought under control. Seems like no matter where a fellow goes with a ready-mix truck these days, he hears the same old "More water!" plea.

Young Set at Work

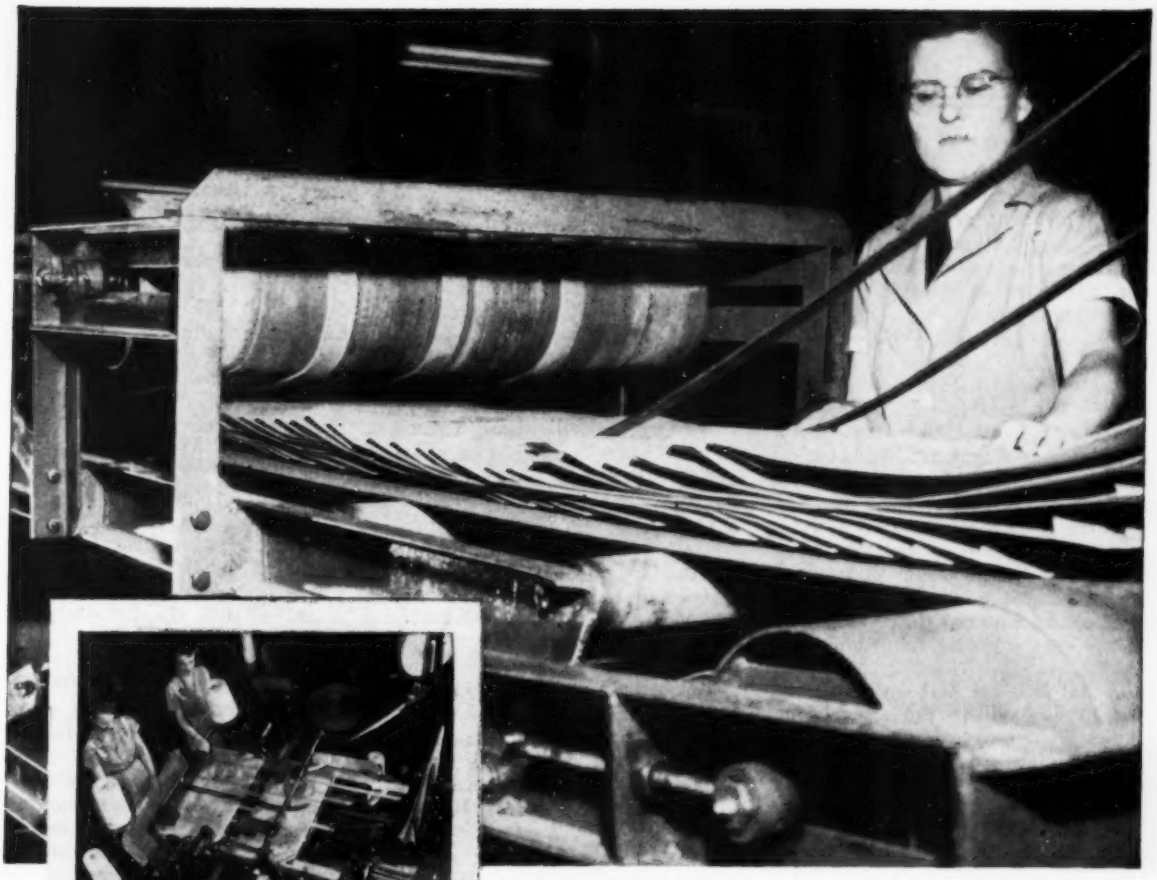
A TOY firm in Cincinnati has quietly withdrawn from the market one of its most realistic creations —a concrete mixer that used real portland cement and sand. Apparently too many indulgent mamas drew the line at having to use jackhammers to clean up after their

pint-sized builders. We'd be willing to bet that for a while there quite a lot of concrete was being employed for some mighty unusual purposes.

Hamcrete

SPEAKING of unusual uses for concrete, a house organ published by Concrete Incorporated of St. Louis tells about an inadvertent application that might have some commercial possibilities. In the process of removing an old slab from the basement of a St. Louis high school, a workman recently found a strange-looking object buried in the concrete. It proved to be a well preserved ham, as fresh and edible as when it was buried in concrete a half century ago.

Harassed mothers with perpetually hungry teen-agers in the house will be quick to recognize the advantages of this method of storage over more conventional methods.



Experienced inspectors watch every phase of V-C's bag-making operation. Extra care in manufacturing has helped make V-C Bags famous for their toughness and stamina.

After "tubing," V-C Bags are rigidly inspected for proper seam pasting, length and size. Special care is taken to see that all surfaces are absolutely bonded.

V-C® Quality Controls Mean Better Bags for You

Rigid quality controls, top-grade bagging materials, and careful construction give V-C Multiwall Bags the ability to stand rough treatment. V-C Bags are available in various styles and sizes, two-to-six ply, expertly designed and printed to your specifications in one to four colors. Write for full information, or discuss your bag requirements with a V-C representative.

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WASHINGTON NEWS LETTER

another P.Q. exclusive

WHETHER the Administration deserves it or not, it is being blamed for the current economic slowdown. What is beginning to worry Administration officials is not the criticism of professional anti-Administration men such as Walter Reuther, president of the C.I.O., and Democratic Senator Humphrey of Minnesota, but rather, that of their friends, primarily the managers of small and middle sized businesses, who are asking—almost *demanding*—that something be done to turn the business tide.

There is no doubt that measures can be taken; nor is there any special secret what those measures are. Expanded public works, acceleration of defense expenditures, higher crop supports, more government-guaranteed loans for construction and other capital expenditures are all weapons in the arsenal of anti-depression devices which can be brought into use. However, it doesn't make sense to pull out the big guns to fight depression before anyone is sure that a depression is really upon us; and the available signs certainly do *not* prove that.

The season has just passed when business men and consumers are asked about their spending plans for the future, and the reports are now becoming available. If these reports provide as good a forecast of expenditure reductions as they provided of previous expenditure increases, then the fear of a real depression is that of the alarmist type.

There are many who feel that regardless of what business does, the ultimate determinant of whether we have prosperity or depression is whether the consumer continues to buy what American industry can produce. It is an economic axiom that effective demand results not only from the consumer's desire to buy but must also be accompanied by the consumer's financial ability to buy. The Annual Survey of Consumer Finances conducted by the Federal Reserve Board provides information on both of these matters.

With respect to desire to buy, the survey finds that a slightly smaller proportion of consumers planned to buy a house in 1954 than in 1953—6.8 percent compared to 8.8 percent—but this was larger than the 6.4 percent who planned to buy a house in 1952. Similar results were found in connection with consumers' plans to purchase furniture, major household appliances, and new automobiles.

The same proportion of consumers planned to purchase used automobiles in 1954 as in 1953, and this was larger than the proportion who planned to buy a used automobile in 1952. A far larger proportion planned to spend money for home improvements in 1954 than in 1953.

If these expectations are realized, as they have been in past years, 1954 will certainly not be a bad year—presumably no worse than 1952—and people in the home improvement business are likely to have a bonanza.

However, there is the other question: "Do the consumers have the financial ability to buy these things?" Here, too, the answer provided by the Federal Reserve Board for the rest of Washington officialdom is optimistic.

More consumers expect to have higher incomes before taxes in 1954 than in 1953. In 1954, annual incomes before taxes of over $7,500 are expected by 11 percent of the consumers; in 1953 it was only 9 percent. In 1954 annual incomes over $5,000 are expected by 31 percent of the consumers; in 1953 it was only 26 percent.

Also 41 percent of the consumers expect to make more money in 1954 than they made in 1953 and only 23 percent expect to make less money this year than last. As many as 36 percent of the consumers state that their financial position is better now than a year ago and only 30 percent state that their financial position is worse than a year ago.

These data certainly do not forecast a tremendous slump in consumer purchases. Quite the opposite—they seem to confirm the facts that consumers have both the desire to buy almost as much this year as last (or at least as much as in 1952) and that they have the ability to pay for their purchases.

Others feel that the real key to the riddle of depression or prosperity lies in the actions of business men. If business men are optimistic about the future and continue to invest in capital goods, then prosperity is insured. In this connection, too, information has recently become available from the Annual Survey of Expenditures on New Plant and Equipment conducted by the U. S. Department of Commerce and the Securities and Exchange Commission.

This is a survey of anticipated expenditures. It reflects somewhat more than just the desire to buy. Capital expenditures are generally planned well in advance, and the money is either set aside or it is firmly established where it will come from. Also, once a capital expenditure program has been begun, it is difficult, and often impossible, to stop short of completion.

Here, too, the results are optimistic. In 1954, all industries expect to spend $27,200,000,000 on new plants and equipment. This is somewhat less than the $28,400,000,000 expenditure record for 1953, but it is higher than the 1952 expenditures of $26,500,000,000. It looks as though business men are expecting to behave in about the same way as consumers.

Expenditures in certain areas are expected to go down, while in other areas they are expected to rise.

Capital expenditures in most durable goods industries are expected to fall, except in the field of motor vehicles and other transportation equipment, where a 20 percent rise is expected. Similarly, capital expenditures in most non-durable goods industries are expected to fall. Exceptions are petroleum products, which are still in a sizable expansion, and rubber products, in which a small rise is expected.

Moreover, capital expenditures in non-manufacturing businesses are expected to continue at a high level and even to rise. Commercial building, particularly of food and general merchandise stores, is going strong. A major factor in the commercial building boom is the continued rising trend in population and home building in suburban areas. In addition, food chains have extensive plans for modernizing and enlarging stores in existing neighborhoods.

This movement to the suburbs is also calling forth large construction expenditures by state and local governments for schools, roads, and utilities.

It is no wonder that with all these signs of continuing high-level economic activity the Eisenhower Administration is reluctant to follow

the advice of those who want it to "pull out all the stops" of its anti-depression program — particularly since that advice is being given by people who didn't and wouldn't vote for this Administration in any event.

Compressor Lubrication

(*From page* 144)

deposit-forming tendencies. The flash point test also compares with evaporation rate and carbon formation.

On the basis of these data and extensive service experience, it has been found that the most volatile oils form the least amount of carbon. From a valve operating standpoint, an oil as light and as volatile as possible should be used for air compressor lubrication. The cylinder and bearing lubrication requirements, however, may call for a heavier oil, which results in a compromise between viscosity and volatility.

(*To be continued*)

British Crushing Plant

(*From page* 154)

rod mills have been installed. Material from the bins is conveyed to the mills, crushed, and returned by conveyor and elevator to the main ⅛ in. sand bin. The finished screened material can be drawn direct from the bins for use as required, but the bulk of this material will pass by conveyor to four stockpiles. An underground conveyor will take the material from these stockpiles to the concrete mixing plant.

To keep dust down to the minimum, a number of dust extraction units have been provided to collect from the crushing and various selected plants. This dust is deposited in small hoppers, from which it can be readily collected.

The plant has had to be designed to work under conditions of extreme heat, sun temperatures as high as 160 deg. F. and shade temperatures of 138 deg. F. being common. The experience gained on the pilot plants indicates that the main plant will operate successfully from this standpoint.

Many well-known contractors are now on the site and are working in conjunction with Kuwait colleagues. The main features of the development of Kuwait are as follows: (1) development of an efficient road system; (2) re-development of the central area of the old town inside the wall to provide good sites for public buildings and commercial houses; (3) expansion of the city outside the wall by developing eight neighborhood units, accommodating in all

For Greater Output and More Profits

See The Complete New Line of "QUICK-WAY" Truck Shovels

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Offering Sensational Engineering Advancements with Traditional "Quick-Way" Simplicity of Design, Interchangeability of Parts, and Rugged Construction

New Features—Models L2 and E2

NEW FULL VISION CAB • All Steel, with safety glass. 360° vision. Controlled ventilation. More comfort.

NEW CLUTCHES • Reversible shoe, improved "roll-in," self-energizing, single adjustment type. All interchangeable.

NEW BRAKES • Automotive type pedal action. Increased leverage. Positive effortless braking power.

NEW CENTER PIN THRUST WASHERS • Heat treated. Encased in oil tight pans. Long life and easy swing due to submerged lubrication in light weight oil.

NEW SWING ROLLERS AND SWING ROLLER PINS • The conical, high alloy steel swing roller and roller pin diameters have been increased. All four rollers and pins are interchangeable and easily removable. Hardened rollers and pins on Model L2 equipped with large, permanently lubricated ball bearings, Model E2 equipped with large anti-friction phosphor bronze bushings and both with submerged center pin thrust washers give the operator smooth, easy, effortless swing. (Hardened rollers and pins with permanently lubricated ball bearings available for Model E2 at extra cost.)

NEW GEAR PANS • New design oil-tight pans encase engine, jack shaft, and main hoist drive gears.

NEW CONTROL CABINET • New design with independent self-filling hydraulic cylinders on each control line. Due to increased leverages in the hydraulic application, greater pressure is transmitted with less effort. Improved clutch lock-in system.

NEW CONTROLS • All control levers, large brake pedals, clutch throwout lever, house lock lever, throttle, etc., have been conveniently grouped with the operator's comfort and additional ease of operation in mind.

NEW HOUSE LOCK CONTROL • New foolproof and positive over-center house lock control. Designed for greater ease of handling and conveniently located for operator.

NEW SET-BACK GANTRY • Bridge type, all-welded construction. Allows better vision, makes crane work easier.

NEW FLOOR FRAMES,
NEW SIDE FRAMES,
NEW COUNTERWEIGHT.

CAPACITY • Model L2: ½ cu. yd., 10 ton crane. Model E2: 4/10 cu. yd., 7½ ton crane.

New Features—Model S2 & J2

Now equipped with NEW BRAKES, NEW CONTROL CABINET, NEW CONTROLS as described above, and NEW CLUTCHES with new increased fulcrum leverage insuring easy energizing clutch action with less effort to the operator.

CAPACITY • Model S2: ⅓ cu. yd., 5 ton crane. Model J2: ¼ cu. yd., 3 ton crane.

Fully Convertible to...

Trench Hoe	Pile Driver
Crane	Magnet
Shovel	Front Dump Shovel
Dragline	Hammer Drive
Clamshell	Clam

Backfiller Blade, Orange Peel, Scoop, Snatch Block, Self-cleaning Trench Hoe Bucket, Telescoping Boom, Log Grapple, Hay Fork, Skull Cracker, and many other special tools available. *Mounted on your own truck or complete with new truck of your choice.*

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Yes, I'd like to know more about the NEW line of labor-saving, money-making "Quick-Way" Truck Shovels. Please send complete details.

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48,000 people, and expansion of two existing villages; (4) development of specialized industrial, educational, and health zones outside the city wall along the coastal road towards Jahara.

In addition to these basic objectives there are such aims as providing an adequate water supply, electricity, and other public services.

Cement Industry's Outlook For 1954 Called Favorable

American cement makers are predicting a good year for their industry in 1954, according to *The Journal of Commerce*. One executive who was interviewed states that it was possible that 1954 cement shipments would total over 235,000,000 bbl., as compared with 261,000,000 last year, despite the current "dip". Another set the probable total at 250,000,000 bbl., and a third believes last year's figure will be met or approximated.

It was indicated that prices are expected to hold steady and that costs will probably not be appreciably higher. But the most important factor contributing to the optimistic outlook is the fact that the producers are now relieved of the heavy excess profits taxes, which last year cost one firm $850,000. Savings realized from this tax relief can be invested in plant expansions, with resulting higher sales.

Continuing emphasis on highway programs, a similar expanding trend in the construction field, and the development of new types of cement are other favorable conditions. Considering these facts, it seems a safe prediction that profits should rise, even if output remains constant.

U.S. Loan Effects Big Increase In Venezuelan Firm's Output

Repayment of a $3,000,000 loan five years in advance of its due date —a somewhat unusual occurrence— was made recently to the Export-Import Bank of Washington by C. A. Venezolana de Cementos. Said Eugenio Mendoza, president of the South American firm in a letter to the bank: "At the time this loan was granted, we were unable to obtain the necessary financing from other sources. With the credit extended by your bank, we have expanded the capacity of our Pertigalete plant five-fold from 95,000 tons on September 30, 1950, to 475,000 tons on September 30, 1953, bringing the capacity of our three plants up to 691,000 tons."

Mr. Mendoza added that his firm had bought more than $12,000,000 worth of machinery in the United States and that Venezuelan purchases here in 1952 totalled $588,000,000.

Diamond Drilling Tests Reported by Mines Bureau

Drilling tests by the Bureau of Mines have shown conclusively that setting industrial diamonds in diamond-drill bits so that their hard faces will dig into rock and ore increases drilling efficiency and greatly reduces diamond loss per unit of work accomplished. The tests are described in a report released by Secretary of the Interior McKay.

The Bureau's report, third in a series, was prepared by Albert E. Long, chief, diamond bit research section. It describes ten tests made to confirm results of earlier experiments which indicated that more footage could be drilled and that diamonds would last longer when set in hard-vector directions.

A free copy of Report of Investigations 5015, *Diamond Orientation in Diamond Bits; Part 3. Effects of Orienting High-Grade Drill Bort in Diamond Core-Drilling Bit Crowns*, can be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.

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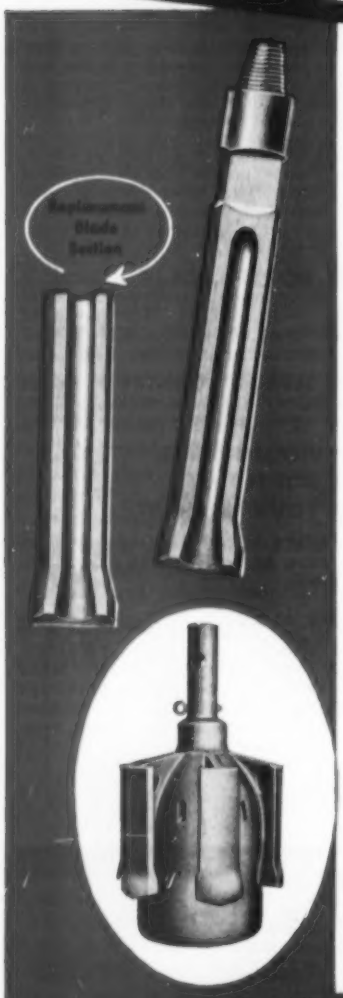
BLAST HOLE BITS

Drill More Holes Per Bit, At Less Cost Per Hole



SPANG CHURN DRILL BITS, famous for long life and economy in the drilling of blast holes for the fragmentation of minerals or overburden, drill *more-holes-per-bit* at *less-cost-per-hole,* because they are fully heat-treated from end to end and have the *extra strength in pin and blade sections* to stand up under the toughest drilling conditions. They are made with semi-dressed ends for quicker, easier finish-dressing, in High Carbon, A.I.S.I. 4340, and Spang Molloy Steel.

Available also, as an added economy, are SPANG REPLACEMENT BLADE SECTIONS in the same grades of steel, and uniform forge section, for welding to pin and collar sections of original bits when long service has worn the integral blade to a point where replacement is desirable.

Anyway you look at it, SPANG BITS are your best buy for more holes at less cost per hole.

SPANG REAMER TYPE PILOT BITS FOR DRILLING LARGE DIAMETER HOLES

Can be supplied in all sizes and in any practical weight.

For information on SPANG BITS, and FREE CATALOG of Complete Line of SPANG Cable System Drilling and Fishing Tools, consult your nearest Dealer, or write direct to:

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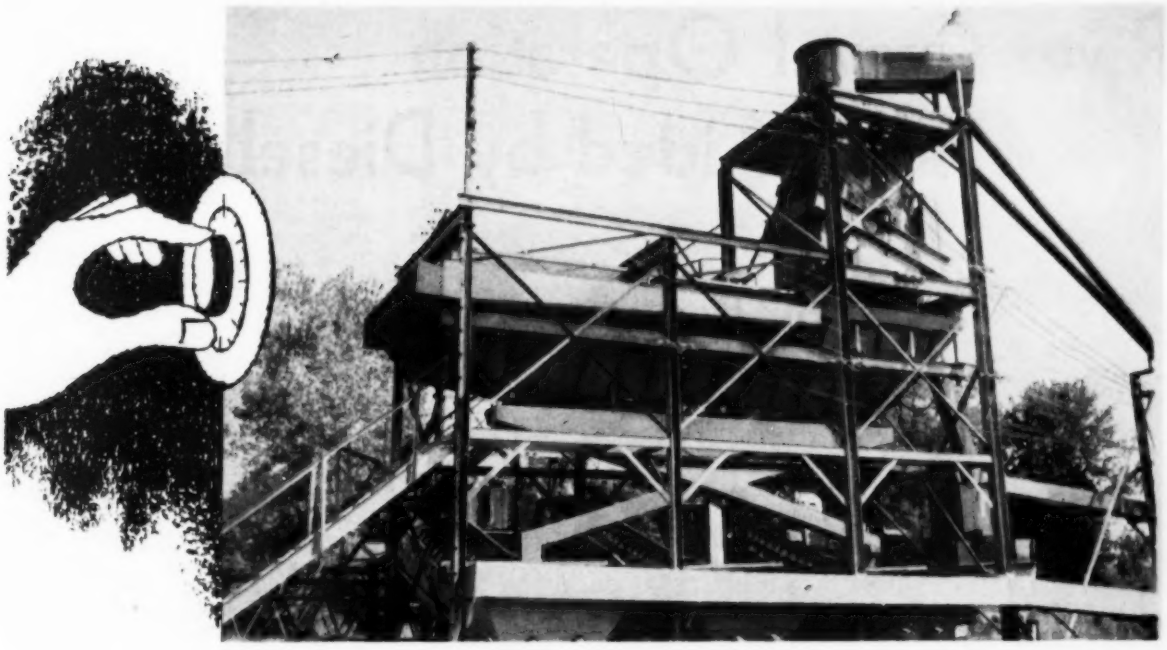
For over 60 years Manufacturers of Spang Weldless Jars and a Complete Line of Cable System Drilling and Fishing Tools for Oil and Gas Wells, Water Wells, Prospect Drilling and Shot Blast Holes.

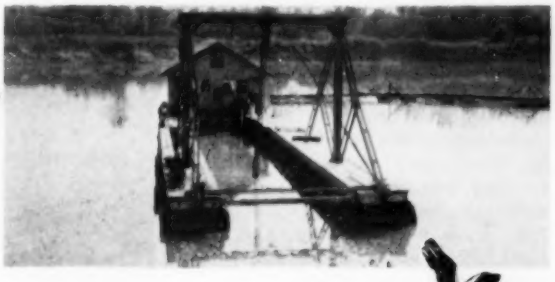


AN **EAGLE** "RIGHT COMBINATION" TO PRODUCE A PROFITABLE COMBINATION

THIS EAGLE Complete Washing-Classifying-Dehydrating Section was fitted into the plant of Gosport Gravel Company, Inc., Gosport, Indiana, like a glove fits the hand. It's just the right combination of equipment to produce a profitable combination of materials for Gosport.

This Eagle Section consists of a 10′ x 32′ dual Water Scalping Tank for removing excess water and provide preliminary classification, dual compartment collecting-blending tray and flumes and three double screw, long weir fine material washer-classifier-dehydrators—one 22″ x 25′ and two 24″ x 25′ units. These three screw units each provide a different blend or gradation of sand—uniformly and economically. At far right in the illustration is an Eagle Log Washer for scouring and abrading material from top deck of screen. With this highly efficient set-up Gosport can profitably produce any blend of sand required.

Other Eagle Complete Section installations are detailed in New Catalog 54, sent on request.



PRODUCTION STARTS WITH AN EAGLE "SWINTEK" DREDGING LADDER AT THE GOSPORT GRAVEL COMPANY, INC.

All material at Gosport's plant is pumped from a pond. Their dredge is equipped with an Eagle "Swintek" unit. The traveling screening chain keeps boulders out of suction line—eliminates shut-downs. Cutter bars on chain agitate deposit—increase intake of solids—save wear on pump. Gosport's "Swintek" is paying its way.

CATALOG 83 GIVES THE FACTS!

EAGLE IRON WORKS 133 HOLCOMB AVE. - DES MOINES, IOWA

EAGLE IRON WORKS

LEADERS IN AGGREGATE WASHING & CLASSIFYING EQUIPMENT FOR A HALF CENTURY

Screw Washers | Log Washers | "Swintek" Dredge Ladders | Clay Crushers | Clay and Cinder Grinders | Breaker Balls & Pile Hammers | Coal Crackers

River Gravel Operation Aided by Diesel Power

Dredging operations of the Ohio River Dredging Company near Huntington, W. Va. Overburden is removed by the steam crane (background). The gravel, drawn hydraulically from the deposit, is washed and screened on the dredge and delivered by conveyor to waiting barges.

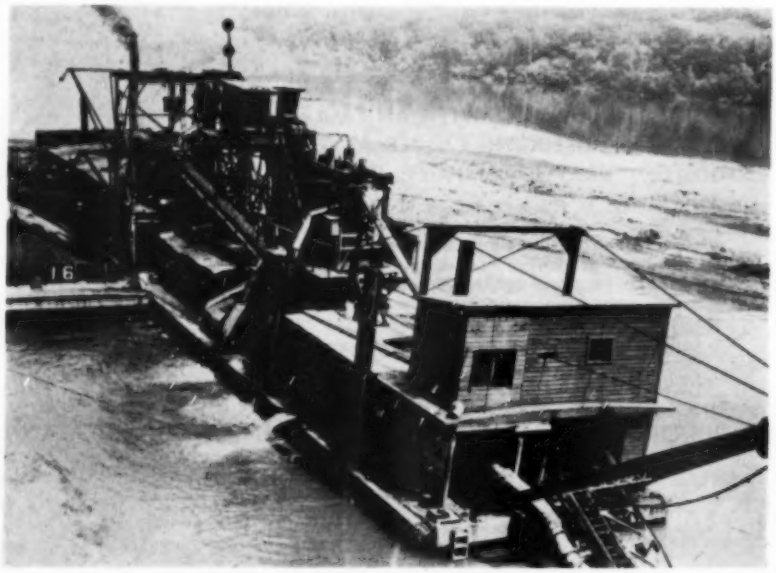
USE of diesel power to dredge river sand and gravel, and to move these products to customers, is paying off for the Ohio River Dredging Company, Huntington, W. Va., at a time when many sand and gravel suppliers find their profits squeezed by high operating costs. Operating two diesel-powered hydraulic dredges and two diesel-powered towboats, with a group of 20 barges, the company obtains its materials at three different dredge sites and delivers them anywhere along the river from Greenup, Ky., to Gallipolis, Ohio—a river distance of approximately 60 miles. The company, which utilizes four Superior diesel engines and one Atlas (all manufactured by The National Supply Company) in its operations, dredged and sold 250,000 tons of sand and gravel in 1952.

E. V. Rawn, president, and Edward Peel, superintendent, direct the company's activities from an operating office in Huntington. A selling affiliate, the Huntington Sand and Gravel Company, owned jointly by the Ohio River Dredging Co. and a neighboring concern, handles all sales. Mr. Rawn, who is the son of E. V. Rawn, one of the country's pioneers in the production of river sand and gravel, spends considerable time with the selling affiliate, and Mr. Peel co-ordinates the activities of the dredges and towboats.

The company's three dredging sites total about two miles of river frontage, each tract running back about 500 ft. from the Ohio. A 22-ft. glacial meltwater gravel deposit, its top at normal water level, underlies the 20- to 30-ft. overburden of "bottom land". A steam-powered 3½-cu. yd. whirley crane is used to remove the overburden and place it in position to maintain the river bank.

The main dredge, operated by James Shamblin and a crew of five men, has a capacity of 200 tons of finished product per hour. Sand and gravel are drawn hydraulically from the deposit by means of a Thomas 12-in. outlet dredge pump. The 12-in. suction pipe is enclosed in a 45-ft. long Swintek dredging ladder, which is a continuous chain scoop cutting head that loosens up the gravel, thereby providing a steady flow of material to the pump. A 40-hp. motor drives this pump, while another 40-hp. motor powers the hoist for the ladder and hose. Connecting the pipe to the pump is a Sandow sand suction hose manufactured by the Cincinnati Rubber Company. The 9,600 g.p.m. Thomas pump operates at 390 r.p.m., drawing 270 hp. from the diesel-engine drive. It is V-belt driven by an Atlas Model 35-SX-6 diesel engine through a Falk Airflex 28AR engine drive coupling. Designed with a 6½-in. bore and an 8¼-in. stroke, this Brown-Boveri turbocharged engine, rated at 300 hp. at 1,200 r.p.m., was placed in service in June, 1953. It is equipped with a Twin Disc power take-off clutch. In order to keep the pump free from grit a 2-in. Gardner-Denver high-pressure pump is operated to supply it with water; the small pump is V-belt driven off the shaft end sheave of the Thomas pump.

From the pump the material goes



A closeup of the dredge in operation, which produces about 200 t.p.h. of sand and gravel. Electric power for the dredge equipment is generated by a 100-kw. diesel generating set.

to a discharge box measuring 40 in. wide by 14 ft. long by 3 ft. deep; it is located 23 ft. above the deck of the boat. In order to overcome the problem of disposing of excess water a header was installed across the front of the box, and a 10-in. overflow pipe was put behind the header. Holes of various sizes cut in the bottom of the discharge box ahead of this header, caused excess water to overflow and be discharged to the river via the waste pipe.

Material passing through the holes in the bottom of this box is discharged onto an Allis-Chalmers 4- by 12-ft. two-flight Ripl-Flo screen. The top deck of this screen has a wire cloth opening the size of the maximum size gravel desired at the time, and the bottom deck has cloth of ¼-in. opening for sand production.

Sand is discharged into a tank 14 ft. long, 4 ft. wide and 8 ft. deep, at the top of which is located another overflow to allow anything lighter than sand to pass overboard with the excess water. From this tank sand is dipped out by an endless chain bucket elevator which carries the sand to a height of 24 ft. and then discharges it into a chute leading to a waiting barge.

The gravel from the screen discharges onto a 24-in. belt conveyor and is carried back to a 4- by 12-ft. Link Belt three-deck screen, also equipped with water sprays. After passing over this screen, the gravel is discharged onto another 24-in. conveyor belt to be barge-loaded.

When it becomes necessary to crush oversize rock coming off the top deck of the Link Belt screen, a 3-ft. Nordberg gyratory crusher is used, which is driven by a GDB 6 Superior diesel engine purchased in 1947. The crushed material is then carried back to the Link Belt screen by a bucket elevator for sizing and washing.

When two sizes of gravel are being produced, the coarser size is loaded onto one belt conveyor from the middle deck of the Link Belt screen and carried to the barge alongside the dredge. The finer size is loaded from the bottom deck of the screen to another conveyor and thus into another barge.

Electric power for the dredge is supplied by a Superior GDB-8 100-kw. generating set, now rounding out its eighth year of trouble-free service; this unit supplies power for all the screening and conveying machinery. The screens are driven by 7½-hp. motors, while 20- or 24-hp. motors drive the bucket elevators. Conveyors issuing from the screens

(*Continued on page* 165)

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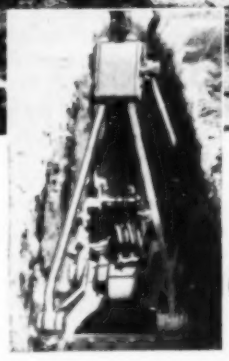

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Report on Current Labor Developments

By S. HERBERT UNTERBERGER
S. Herbert Unterberger and Company
Industrial and Labor Economists
Washington, D. C. — Philadelphia, Pa.

Minimum and Maximum Wages on Government Construction

another P and Q exclusive

IN A recent decision the U. S. Supreme Court taught a construction company which took a government contract a lesson in English which will be long remembered in the industry.

The contractor was low bidder on a government construction job and accordingly entered into a contract which included the usual requirement under the Davis-Bacon Act that he was to pay wages "not less than those stated in the specification". Those were the wages determined by the Secretary of Labor to be "prevailing" in the locality.

When the contractor began working on the job, he discovered that he could not hire the workers he needed at the rates set forth in the contract and that to get the work done he had to pay higher rates. He also discovered that even before he entered his bid, the Secretary of Labor had determined that higher rates were prevailing in the locality than those set forth in the specifications for the particular job on which the contractor had bid.

The contractor tried to collect from the government the difference between the rates he had to pay and the rates which he was led to believe were prevailing in the area by the specifications.

The Supreme Court turned him down, saying, "The Act does not authorize or contemplate any assurance to a successful bidder that the specified minimum will in fact be the prevailing rates. Indeed, its requirement that the contractor pay 'not less' than the specified minimum *presupposes the possibility that the contractor may have to pay higher rates.*"

Although the Davis-Bacon Act provides that minimum rates will be determined on the basis of prevailing wages in the area, the Court said that "this provision cannot convert the contractor's obligation to pay not less than the minimum into a government representation that the contractor will not have to pay more".

This decision puts contractors for the government squarely on their own; it gives notice that they should not rely entirely on the government's finding of prevailing minimum wages but should also make their own investigation. Although this case dealt only with government construction contracts covered by the Davis-Bacon Act, it is likely that the same principle would apply to most other government contracts covered by the Walsh-Healy Act as well.

Unemployment Insurance

With the current rise in unemployment, there has been a revival of interest in the state unemployment insurance program. In recent years some significant changes have been made, primarily in the amount of benefit payments.

The maximum weekly unemployment insurance benefits for an unemployed person without dependents varies from $20 to $35 per week, depending on the state. In a few states additional benefits, based upon the number of dependents, can raise these amounts as shown in the table below.

In addition, in Colorado, the maximum benefits are raised from $28 to $35 for claimants who have been employed in the state for five consecutive years with wages in excess of $1,000 per year and no benefits received. For such claimants the maximum number of weeks for which they can receive benefits is also increased from 20 to 26.

As things now stand, 20 states having 55 percent of the covered workers, provide a maximum weekly benefit of $30 or more. Three states with only 3.5 percent of totally-covered workers provide a maximum weekly benefit of $22, and five states with 7.4 percent of the covered workers provide a maximum weekly benefit of less than $22.

The other areas in which amendments have liberalized the unemployment insurance benefits is in the matter of duration. The potential maximum duration of benefits ranges from 16½ to 26½ weeks. More than two-thirds of the workers covered by state unemployment insurance systems are in states which provide the maximum of 26 weeks of benefits.

On the other hand, the unemployment insurance laws have also been tightened in several respects. In general, the previous earnings required before a worker becomes eligible for unemployment insurance benefits have been raised, while the causes for which a worker could be disqualified from receiving benefits have been increased, particularly if he has been disqualified because of his participation in a labor dispute.

Time Limit on Organizational Picketing

If a principle enunciated in a case involving a small restaurant in Philadelphia is upheld on appeal, the phenomenon of year-in-year-out picketing of small employers which has become a familiar sight in many large cities will come to an end.

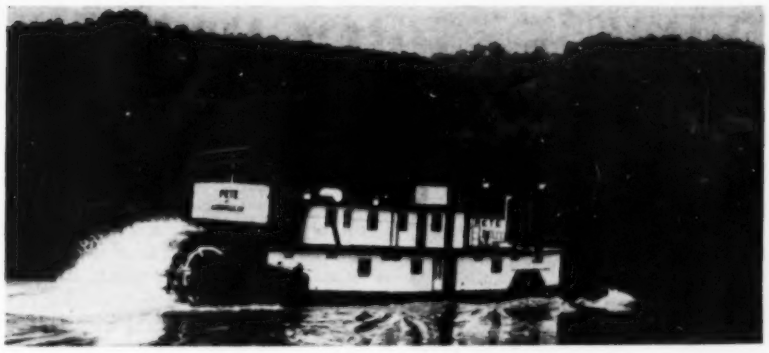
In this case, picketing began back in 1949, when the employer refused to agree to a contract provision which would have been tantamount to a closed shop. In December of that year, a representation election was held which the union lost. As a result, thereafter, it no longer represented the employees. Nevertheless, the union continued a picket line in front of the establishment until very recently, when the local court enjoined them.

When issuing the injunction, the court announced a new theory as follows:

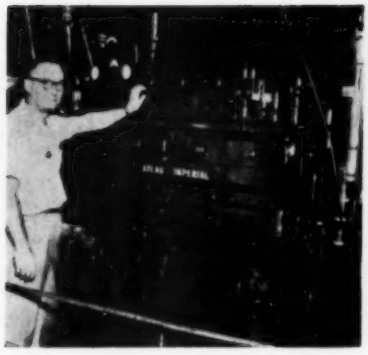
(*Continued on page* 172)

States	Required for No. of Dependents Maximum Benefits	Maximum Weekly Benefits Without Dependents	Maximum Weekly Benefits With Dependents
Alaska	5	$35.	$70.
Arizona	3	20.	26.
Connecticut	5	30.	45.
D. C.	3	20.	20.*
Maryland	4	30.	38.
Michigan	varies	27.	35.
Nevada	5	30.	50.
N. Dakota	varies	26.	32.
Ohio	2	30.	35.
Wyoming	2	30.	36.

*Same maximum with or without dependents. Dependent benefits paid only if worker does not otherwise qualify for maximum benefits.



View of the "Pete", the principal towboat of the Ohio River Dredging Co.



President Rawn and the 300-hp. diesel.

River Gravel Operation

(*From page* 163)

are driven by 3- or 5-hp. motors.

Water for washing the gravel on the screens and for the deck hose is supplied by a 6-in. Type G Gardner-Denver centrifugal pump.

The firm's other dredge is a 10-in. pump boat with an Amsco pump powered by a GDB 8 Superior diesel engine and driven by a flat belt. It discharges 18 ft. high on a 3- by 8-ft. double deck Bonded screen, where the sand and gravel are separated and chuted to waiting barges. This screen and the hoists are powered by 115 v. d.-c. motors, the current for which is supplied by a 10kw. Hill diesel-electric set.

The *Pete*, which does the principal towing job for the company, is a 73-ft. sternwheeler. The craft is powered by a Superior engine of 9-in. bore and 12-in. stroke, rated at 215 hp. at 500 r.p.m. but operated at 430 r.p.m. The engine is mounted crosswise in the 20-ft. hull, on the main deck just forward of the pilothouse position. A 24-in. belt conveyor runs from the shaft pulley 50 ft. back to the jack shaft. The final drive to the 27 r.p.m. sternwheel is by chain. The Superior engine was installed in 1950; it had been used since 1941 on another boat.

Equipment on the *Pete* includes a portable conveyor by means of which sand and gravel can be delivered for unloading at any riverfront spot the customer names. Made by Barber Greene Co., this gasoline-powered 24-in. belt conveyor can handle 200 t.p.h. It has a maximum reach of 435 ft., provided by three 60-ft. stackers, one 45-ft. stacker, and 210 ft. of portable frame.

For regular unloading in Huntington, a cable line conveyor car system, using a 100-hp. reversible electric motor, takes sand and gravel from the 1¾-cu. yd. clamshell bucket of a steam derrick to the tops of the storage bins. These bins are located behind flood walls.

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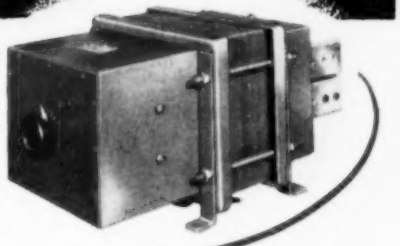

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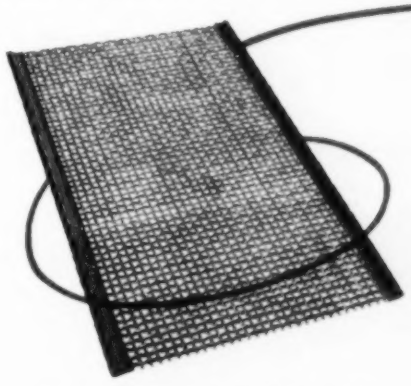

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PIONEERS IN ELECTRIC SCREEN HEATING — FIRST IN THE FIELD OF LOW VOLTAGE AND HIGH AMPERAGE SCREEN HEATING

NATIONAL GYPSUM'S PROGRAM OF SAFETY IN ACTION

By M. C. M. POLLARD
Director of Safety
National Gypsum Company

another P-Q exclusive

Results of an accident prevention program are in direct proportion to the support given by top management. It is better to have a long range plan for improvemnt than to carry out occasional "shot-in-the-arm" efforts. Plant supervisors are anxious to accept responsibility for safe operations and do so willingly when convinced that there is a practical approach to the problem.

These are but a few highlights of a 12-year period in which the National Gypsum Company has progressed in its safety program. In 1942 injuries occurred at a rate of 94 per 1,000,000 man-hours. Compare that with the present rate of 15, and you have proof of the introductory statements. These figures cover both medical-only and disabling-injury cases. Lost-time frequency has been reduced from 25 to 5.

This improvement came during a time of growth that can be best illustrated by the increase in dollar sales from $22,000,000 in 1942 to more than $116,000,000 last year. Operations include mining, quarrying, rock processing, manufacturing of more than 150 products, materials-handling carriers ranging from ocean vessels to hand trucks, equipment that runs the gamut from mammoth

Melvin H. Baker, chairman of the board of the National Gypsum Company, who lends his personal influence to a safety setup that works.

punch presses to hand tools, and processes developing temperatures as high as 3,000 deg. F. This highly varied program is accomplished in 35 plants located in all parts of the United States and in Canada.

There was a time when men were brought into a plant while recuperating from accidents and paid for merely sitting there, in order to avoid lost time. This situation no longer exists. If an injury is serious enough to keep a man from doing productive work, he is provided the care necessary for complete recovery before he returns to his job.

You have to understand the spirit of National Gypsum to fully appreciate the story. Management is positive, has faith, believes in the slogan "it can be done"—and then goes out and gets "it" done. There is no room for any other concept or course of action. The entire organization is sparked by the dynamic leadership of Melvin H. Baker, chairman of the board, who demands a safe, efficient operation. Policies are interpreted and administered by L. R. Sanderson, president, who, through his calm, thoughtful, and kind approach brings out the best efforts from others. Aggressive action in operations is guided by F. A. Manske, vice-president. Mr. Manske plans carefully and thoroughly, then conducts a constant follow-up until the results have been tabulated. Directly responsible for manufacturing is W. F. Anderson, an experienced, understanding, imaginative vice-president. Reporting to him are the production managers, who divide the burden of

National implements a slogan --- "It can be done"

Left: L. R. Sanderson (right), president of National Gypsum, discusses an important angle with W. F. Anderson, vice-president in charge of manufacturing.

Right: F. A. Manske, vice-president of the company, in charge of operations, plans for safety and sees to it that approved policies are carried out.

plant operations. These men represent top management to plant people and they maintain close contact with their problems by frequent visits. The directors of labor relations, safety, mines and quarries, and production control, who are responsible to Wells Anderson, round out the home office production staff.

Even though there are a number of people involved, the demands of the Chairman for safety become that much more numerous as they filter down through. This is best illustrated by reference to an outline authored by Fred Manske in 1951. The first paragraph of the booklet, *Plant Managers' Responsibilities and Objectives*, reads as follows:

"It is your responsibility to maintain your plant in a safe, clean, orderly condition all of the time. This is to be the first and ever-present condition of all operations."

Further evidence of interest is in Wells Anderson's statement of action necessary for further improvement:

1. Increase plant managers' interest and participation in the safety program.
2. Train supervisors and foremen so that they understand the basic principles of accident prevention as they apply to production.
3. Make safety an integral part of training plant people.

Applying management's policy is up to each plant manager. He runs his plant as though he owned it. Assistance is available for him from the staff in home office, but the decision as to what is best for his operation is his own; results are his responsibility. He is "top management" to each man and woman in his plant. Realizing that one of the marks of being a good manager is in having a safe, efficient operation, he wants to measure up. He knows it is expected of him, and he plans his work accordingly.

You may well ask, "But how and where does a person integrate safety with such decentralized units?" "What brought about the present rate of only 15 reportable injuries per 1,000,000 man-hours?"

It probably began with purely economic reasons. Back in 1938, 1939, and 1940 accident experience had been so unfavorable that the insurance brokers, Marsh and McLennan, were having difficulty interesting any carrier to take the Workmen's Compensation coverage. The late F. E. Davis, secretary-treasurer, realized the importance of the problem. Upon being informed of the situation, M. H. Baker conferred with the late G. H. Tarbell, then vice-president, and Mr. Davis. It was decided that the company needed a director of safety, and that since accidents interfered with production and added to its cost, the new staff man would report to the top operating executive of the company.

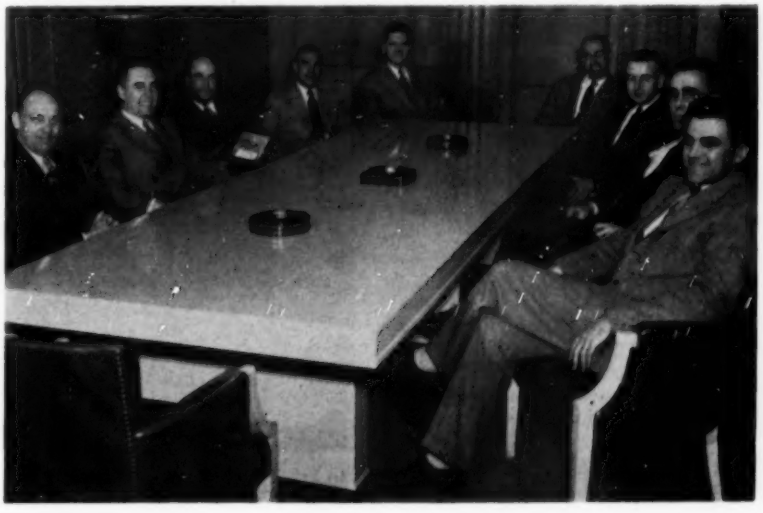
The decision was discussed during the annual meeting of plant managers in 1941. Out of this conference came the suggestion that it would be best if the man selected came from one of the plants. Several people were considered. On the basis of the improvement made in safety at the National City, Mich., operation, the safety supervisor there, who had had about seven years of plant experience, was brought to Buffalo. He was interviewed and selected for the job, and began working on March 1, 1942. He was made a staff man in the production department, reporting to the vice-president in charge.

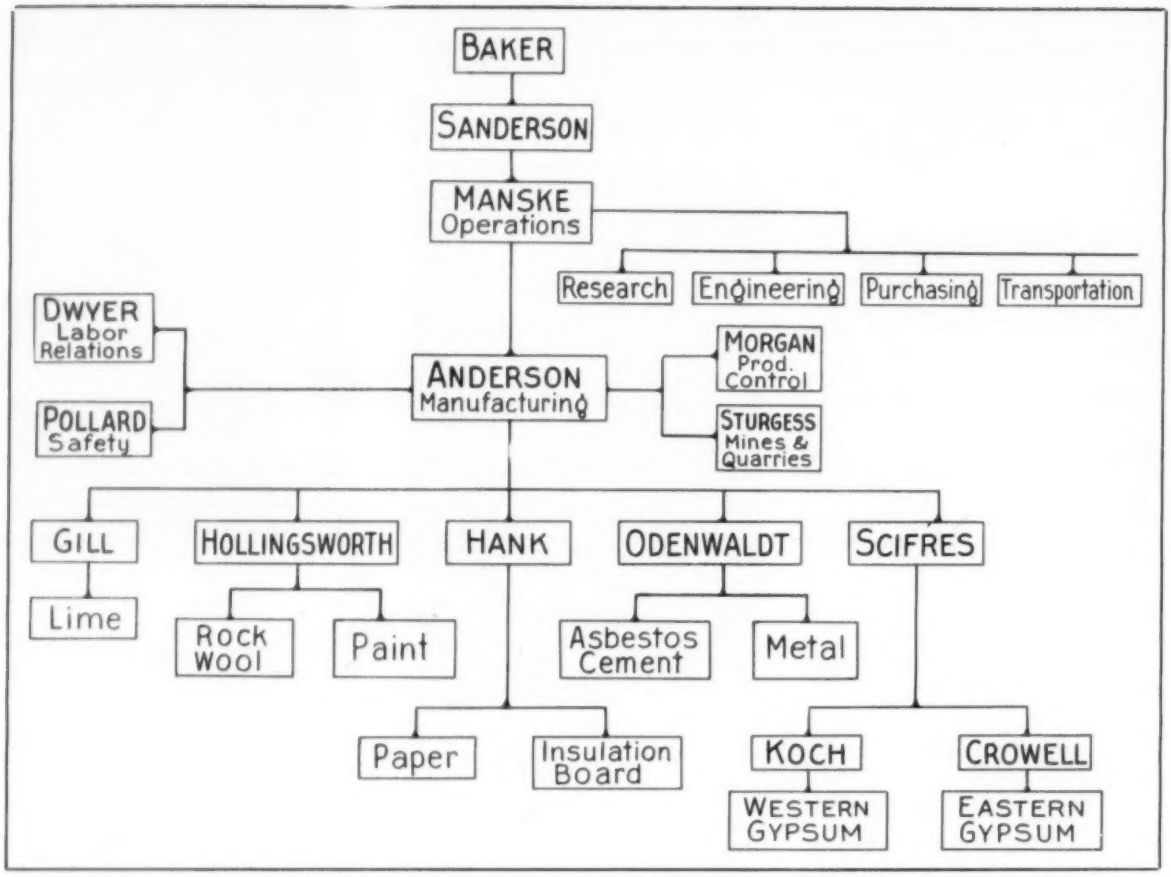
National City's program was outlined and sent to all plants, and suggestions were requested. The pointers received were carefully considered and incorporated in the outline. The same basic program which was drawn up then, approved by management, and put into practice as part of policy is being followed today. Much of the credit for the program belongs to J. J. Burns and F. A. Manske, then the only two production managers, who reviewed several drafts and finally gave their approval. Valuable assistance was given by R. J. Crosby, of Marsh and McLennan, and his assistant, Emil Meuser. The encouragement and counsel of G. H. Tarbell and F. E. Davis also contributed substantially to the final result. Mr. Baker's insistence upon action implemented the completion of the program and its distribution to the plants early in June, 1942.

E. B. Hollingsworth, production manager for the rock wool and paint operations.

Responsibility for safety was placed with each plant manager. His department heads, in turn, and their foremen had to assume their respective responsibilities. If a plant had a safety supervisor (there were then only two), he was set up in a position

A typical monthly production staff meeting. Left to right: M. C. M. Pollard, director of safety; G. E. Koch, assistant manager of gypsum plants; E. W. Odenwaldt, production manager, asbestos cement and metal cloth; L. H. Hank, production manager, insulation board and paper; Mr. Anderson; L. B. Crowell, assistant manager of gypsum plants; R. E. Gill, production manager, lime; C. R. Morgan, manager, production control; and R. E. Scifres, production manager of gypsum plants. Mr. Odenwaldt is holding the Melvin H. Baker Safety Award for 1953, won by his St. Louis asbestos cement plant.





Organization chart of production, of which safety is the first responsibility.

as staff to the plant manager. He had no direct authority and was to act as consultant, advisor, and keeper of records. His responsibility was to see that details of the program were carried out.

Report forms were kept to the minimum. Plants were required to send to Buffalo the following: a foreman's report of accidents, minutes of safety meetings, and a monthly summary of accidents and man-hours.

No more is required today.

Headquarters rated plants according to their disabling-injury frequency rates. The end of 1942 found that rate worse than it had been in 1941. There were 140 temporary total disabilities, three permanent partials, and two fatalities—145 accidents, with 15,522 days of time charged! The frequency rate was 25, the severity rate, 2.6.

It took time to get all of the plants organized with safety committees and to set up a schedule of periodic inspections and report results. The director of safety was instructed to visit each plant at least once each year. This helped to smooth out details. World War II created a tremendous demand for men. Demands upon those left in the plants became more and more pressing, to meet war production needs. Lack of training was evident. The director of safety went to each plant and conducted job instructor training courses for the supervisors. A year later a 4-hour course covering the fundamentals of accident prevention was put on at each plant for the same group. It was a straight lecture presentation, conducted in two 2-hour sessions.

As the result of these training sessions, a realization of the responsibilities of foremen grew. The safety program was revised annually, insofar as its detail goes, because of a more adequate understanding. The

Mr. Scifres, Mr. Koch, Mr. Crowell, and Mr. Anderson. Mr. Scifres holds the safety award which Mr. Crowell will present to the Savannah, Ga., gypsum plant.

basic outline of responsibilities and organization remained the same. At the end of 1945 the record included only 75 disabling injuries and 3,732 days of lost time. The frequency rate was 12.5, and the severity rate was 0.6. Two fatalities had occurred in 1944, but none during the last year of the war.

By this time all but two plants were staffed with safety supervisors. Thousands of dollars had been spent to clean up and guard machinery. The company had launched its post-war expansion program. Interest spread to other departments, and as Engineering designed new plants the necessary safety features were incorporated into the plans. There was an increasing demand for safety equipment. Management did not then, and does not now, withhold approval for necessary expenditures to provide a clean, safe work place.

As the number of plants increased and the organization grew, interest in accident prevention was heightened. Better service was demanded of insurance carriers, servicing agencies, and others who worked in any way with plant safety. Results were as follows:

Year	Frequency	Severity
1946	14.3	*2.2
1947	11.1	1.1
1948	11.4	*2.0

*Included fatal accidents.

It appeared that there was a "leveling-off". Some new approach was necessary. Management was not satisfied with standing still. A review of effort revealed that it was time to emphasize accidents other than those that caused lost time. A new method of rating was proposed, tried throughout 1948, and adopted for use in 1949. This system included medical-only and disabling injuries, and comparison was made with the actual experience at a plant *versus* a standard. It is the method which has been in use since that time, and it has proved to be most practicable. The reportable injury frequency rate at the end of February, 1954, was 15, broken down as follows:

Injury	Rate
Medical-only	9.5
Disabling	5.5

This record is the best in the history of the company. Management is of the opinion that if such results have been capable of achievement, plants can do even better. What brought about the improvement, and at a time when 11 plants were added to the company, bringing the total number up to 35?

Continued growth prompted more effective organization. M. H. Baker moved up to the post of chairman of the board. L. R. Sanderson was promoted to the office of president. Engineering, purchasing, transportation, research, and production was made the responsibility of F. A. Manske; and W. F. Anderson was named vice-president in charge of manufacturing. This team, after a thorough analysis and careful planning, urged Mr. Anderson to strengthen production management. Accordingly, Mr. Anderson selected a group of men, each having the responsibility for about five plants. A part of the planning included an analysis of safety effort, which led to the slogan, "It can be done." That program has since been followed.

N. K. Upton (director of training), Mr. Pollard, C. H. Dwyer (director of labor relations), and C. P. Dunn, editor of "National Gypsum News", looking over a new safety training film.

Details included dusting off the course in the fundamentals of accident prevention which had been given during World War II. Content was brought up to date, revised, and put into sound slide-film form. Entitled *A Way to Efficient Production*, this course was produced in 1952 and sent to plants for completion during the first half of 1953. The course was comprised of four one-hour sessions, each one introduced by a sound slide-film running about 8 minutes. The remainder of the hour was spent in discussion. The four films, with records and the discussion leader's guide, made a package. Those plants not having trained discussion leaders sent representatives to Buffalo for an intensive one-week course. Plans were made through the collaboration of the director of safety, the director of labor relations and the director of training. All plants completed the course on schedule, and follow-up is being carried on through the use of case studies from actual experience. One such study is prepared for use in a one-hour supervisors' meeting each quarter. This practice keeps fundamentals alive in their thinking.

In addition to this training, most plant personnel make "Safety First" mean just that. No meeting of any kind is opened without some reference to safety by way of introduction. In their weekly reports to production managers, plant managers write first about safety, fire, and housekeeping.

Mobile, Ala., was the first plant to make the wearing of safety shoes compulsory for all employees. The Bellefonte, Pa., operation was the first to have every man, including those in the mine, wear eye protection while at work. The American Optical Company's "Sight Screener" is used in 16 plants. Men in all plants are furnished corrective-protective glasses at no cost to them other than the eye examination. A program of sanitation is followed and strengthened through the services of the West Disinfecting Company. Ansul Chemical Company's dry chemical fire extinguishers and Fyr-Fyter "Instant" extinguishers are standard equipment.

Housekeeping and fire prevention and protection are all included in the safety effort. Plants are maintained in a clean and orderly manner —indoors and out. Tennant power sweepers aid the daily clean-up program. Periodic inspections are made for housekeeping, and awards go to the best department of the month. All fire protection equipment is checked weekly. Plants have organized brigades which meet regularly for instruction and drill.

Departmental meetings are fea-

tured in most plants. At Rotan, Tex., an outstanding job is done. The foreman conducts the meeting; he covers all phases of production with his men. Labor unions are urged to appoint safety committees to make plant inspections and resulting recommendations. Their representatives sit in on most safety meetings.

Although there are no nurses, each plant has a well-appointed First Aid room. Key people are given First Aid training at least once every three years by the Bureau of Mines.

Members of plant management are urged to be leaders of safety in their respective communities. Here again M. H. Baker inspires action, having served as a member of the National Safety Council's board of trustees for many years. Plant personnel are encouraged to participate in local and state safety contests and to attend similarly sponsored conferences. Each plant has a unit membership in the National Safety Council.

Sincere co-operation with state departments of labor and industrial hygiene divisions is stressed. Many fine relationships have been established among these groups.

Just a word about insurance. National's experience now makes it a desirable risk. Rates have come down to a point where annual savings more than pay for the program. Plants in New Jersey, Pennsylvania, and New York are self-insured and capably serviced by Laverack & Haines, Inc. Ohio plants are covered in the State Fund, and all others insured through the Hartford Accident and Indemnity Company. Canadian locations are covered under their respective provincial laws. Strange as it may seem to outsiders, management makes no request for a cost report. When a man is injured, each plant manager is expected to provide the best medical care available. No consideration is given to limitations of laws in several states covering medical expense. Whatever is necessary is spent for recuperation and rehabilitation.

Executives of National Gypsum Company are humane and appreciative. Their motive in establishing the safety program is evident in this statement, made by President Sanderson: "The men who work for the company are our greatest asset. We must protect them."

How does the program work in a new National plant? On January 1, 1953, National bought asbestos-cement plants in New Orleans and St. Louis. The New Orleans plant had ranked at the bottom of the list of all plants participating in the local council's safety contest. The average experience was 18 accidents monthly. Before the end of the year the program had been put to work, and there has been no injury since November 18, 1953. The St. Louis plant won the Melvin H. Baker award for the greatest reduction in its accident rate during 1953.

An annual contest is conducted in each manufacturing division. Bronze plaques are awarded to the plants attaining first place in their respective groups, provided that their rate is at least 25 percent better than the rate for all plants. In addition, there is usually a dinner, and a pair of safety shoes or some equally attractive premium is presented to all the employees in the winning plant. In 1942 *one out of every four men* at work in the plants was involved in an accident resulting in injury. Today, *only one out of every 31* sustains an injury.

Best results can be obtained when safety is made an integral part of production. Any company can achieve such results if top management is actively interested; if organization is geared to get results; if safety is the responsibility of the top operating executive; if fundamentals are kept alive; if planning is thorough; if the program is practical; and if participants have patience and are willing to work hard.

BACK OF EVERY H&B SAND AND GRAVEL PUMP

are 87 YEARS of Engineering Experience

PLUS—the most complete stock of parts in the industry—assuring dependable PERFORMANCE and dependable SERVICE.

H & B sand and gravel pumps are available in two general types: STANDARD (in 4", 6" and 8" sizes) with semi-steel parts, for ordinary working conditions and moderate heads; and DREADNAUGHT (6", 8", 10", 12" and 15" sizes) with manganese steel parts, for heavy duty jobs with stringent head conditions. Write for Bulletin DP-147.

HETHERINGTON & BERNER, INC.

753 KENTUCKY AVENUE INDIANAPOLIS 7, INDIANA

total cost...

...of enough ERTRANE® C to give a barrel of portland cement all the advantages of air-entraining cement!

That's right! Mill superintendents who keep careful records report that to make air-entraining cement Nopco Ertrane C adds less than a cent a barrel to the cost of regular portland cement.

It's true that there are other agents which cost slightly less than Ertrane C—*to start with.* But count in time and labor costs, you'll find that with Ertrane C you're way ahead of any other product.

For, since Ertrane C is a completely water-soluble powder:

1. You *don't* pay for freight and storage on water, as with liquid additives.
2. You *don't* have to add other chemicals to dissolve it, as with other powdered additives.
3. You *don't* have to take time out to clean clogged feed nozzles.

We urge you to try Ertrane C in your own cement, mixed your own way. We'll glady supply testing samples. Because we know that once you keep cost records on it, you'll air-entrain with Ertrane C. Write today.

NOPCO
EVOLVED THRU RESEARCH

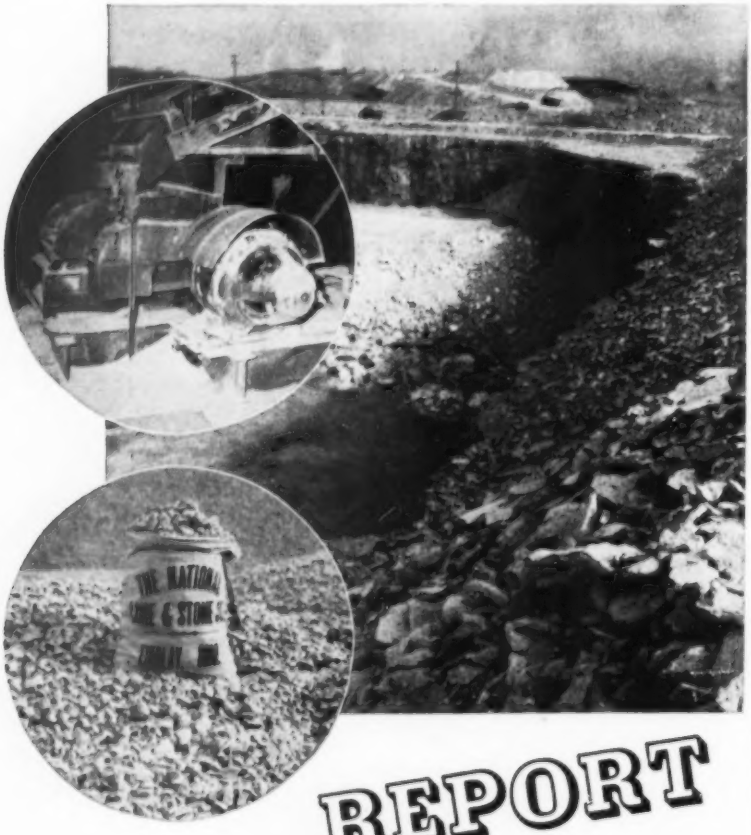
NOPCO
CHEMICAL COMPANY
Harrison, New Jersey
Cedartown, Ga. · Richmond, Calif.

Labor Developments

(*From page* 164)

"We have concluded that there is no right in a labor union to maintain organizational picketing for an indefinite time; that such picketing can be continued for only such a period as is reasonable under the particular circumstances and consistent with the avowed purpose of the undertaking. It is also our conclusion that when picketing for organizational purposes only has continued for more than two or three weeks in the case of a business establishment involving a small number of workers, or for two or three months in an enterprise employing hundreds or more workers, the union has not succeeded in its attempt to bring within its ranks the majority of the employees; the burden is then upon the union to justify interference with the employer and his employees."

The notion that the courts can establish the reasonable time limits for organizational picketing is new. Many other courts, seeking a solution for a similar annoying problem, might very well adopt it.



REPORT

"NO DOWNTIME IN 4 YEARS"

It's that kind of record that makes Eagle equipment a favorite in the limestone field. In addition to the faithful 24 x 24 hammermill pictured above, there is installed in this quarry an Eagle 36 x 42 which takes the rock from the gyratory crusher and reduces it for the smaller mill.

Please write for more details if you're interested.

EAGLE CRUSHER CO., Inc. GALION OHIO·U·S·A

JAW CRUSHERS • IMPACT BREAKERS
PULVERIZERS · CONVEYORS · LOADERS

Personal Mention

J. G. Wilson

Three changes in the engineering and lime departments of the Warner Company were announced recently. J. Gilmore Wilson, formerly general superintendent of the Cedar Hollow plant, is now chief design engineer, with headquarters at the main office. Mr. Wilson's duties will be company-wide, and he will report to E. L. Shoemaker, director of enginering and purchasing. He joined the company in 1920 as an engineer

J. O. Sherod

H. L. Woodland

and was appointed general superintendent at Cedar Hollow in 1929.

Joseph O. Sherod, formerly assistant to H. J. Whitten, vice-president in charge of the lime division, has been named chief industrial engineer, and will head the newly-created industrial engineering department. He will also report to Mr. Shoemaker.

Horace L. Woodland replaces Mr. Wilson as plant manager at Cedar Hollow. Mr. Woodland was formerly superintendent of this operation. His association with the Warner Company dates from 1915.

Archie H. Adams, formerly assistant plant manager of Universal Atlas Cement Company's Buffington, Ind., plant, has been promoted to the office of plant manager. Roald W. Nygaard has been made assistant plant manager. Announcement was made by W. Owen Lawrence, general operating manager of the U. S. Steel Corporation subsidiary. Mr. Nygaard was previously supervisor of industrial relations.

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

WHY WORM GEAR? The merits of worm gear speed reducers are many this 174-page *Cleveland Worm & Gear* catalog points out, giving full details on the design, manufacture, sizes and types of this famous line of reducers for all industrial needs. (1)

CRANE CARRIER. The new *Cook* one-man-type crane carrier is described in this 6-page folder. Big feature of the carrier is the independent power supply which permits independent travel and swing. (2)

ASH SLUICING SYSTEM. Devised for power plants by *United Conveyor Corp.*, this system can be engineered as either a pneumatic or a hydraulic conveyor system, this 32-page brochure points out. (3)

MAGNET-ALARM. A new permanent magnetic separator built by *Eriez* signals you when the accumulation of tramp iron on its face reaches a danger point. This gives maximum protection, saves time and ups production, Eriez says. (4)

"ALLOY STEELS PAY OFF". Longer life, greater payload, lower operating costs, greater safety and less maintenance are the virtues of alloy steels, this 208-page *Climax Molybdenum* publication point out, discussing the subject from every aspect. Specific case histories are given. (5)

SERVICES AND PRODUCTS of *General American Transportation* are outlined in this 48-page book. The firm builds, sells and rents special railroad freight cars, fabricates and welds any metal or alloy, and makes drying, cooling, dewatering and other process equipment (6)

SHOVEL-CRANES. The fully-convertible *Link-Belt Speeder* line comes crawler, wheel or truck-mounted, in ½ to 3-yd. capacities, 10 to 60-ton lifting power. This brochure shows the various models at work. (7)

EXACT GRADATION of aggregates, produced by portable plants, is discussed in this 24-page *Pioneer Engineering* brochure, "An Idea That Sparked a Million Miles of Highway!" It is a textbook guide to portable plant selection. Several typical installations are described (8)

HARD-SURFACING MANUAL. Complete information as to type of alloy to use, preparation, welding and finishing procedures for hard-surfacing parts of equipment is given in this 45-page *Victor* loose-leaf manual for mining, dredging and quarrying. (9)

BEARINGS GREASE. Advice on how to select and use the proper grade grease for ball and roller bearings in all types of applications fills this helpful *Master Lubricant* Lubriko folder. (10)

CONTROLLED IMPACT. The inside story of "controlled impact action," the exclusive operating principle of the *Universal* Impact Master primary breaker, is told in this 12-page brochure. The line includes 32x40, 36x45, 42x50 and 52x60 models. (11)

PLANT LUBRICATION. Five plans for better plant lubrication systems are discussed in this 12-page *Alemite* brochure. Plans range from hand through power-operated lubrication systems. (12)

TRUCK SHOVEL. Labelled the "hardest working little truck shovel ever built," the Miti-Mite mounts on any suitable truck, converts to any type service, this *P&H* bulletin says. Shovel has 11 cu. ft. capacity, crane 7-ton. (13)

PORTABLE COMPRESSORS. Two new sizes of *Joy* portables—75 cfm and 125 cfm—are described in detail in this 24-page bulletin. The full line has six sizes, including the 630, largest capacity on the market. (14)

POWER TRANSMISSION equipment made by *Lovejoy Flexible Coupling Co.* is featured in this 24-page catalog: variable speed pulleys, wide V-belts, sheaves, motor bases, countershafts, Select-O-Speed transmission. (15)

SILENT CHAIN DRIVES. Constructed of leaf links having inverted teeth so designed that they engage cut tooth wheels in a manner similar to the way a rack engages a gear, silent chain combines the flexibility and quietness of a

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(Sec. 34.9 P. L. & R.)
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BUSINESS REPLY CARD
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431 South Dearborn Street

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MAY 1954

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39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
58	59	60																

In addition I would like information on:

_____

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

belt with the positive action and durability of gears and the efficiency and convenience of a chain, this 92-page *Link-Belt* catalog says, giving all details and technical data. (16)

TWIN-POWER SCRAPER. High production with one man and one machine is promised for the *Euclid* described in this brochure. Self-loading, it works 30 percent grades, speeds up to 31 mph, carries 18 yd. struck, 24 at 1:1, and has a total of 380 or 400 hp. (17)

V-BELT DATA. New horsepower rating tables to permit the design or redesign of V-belt drives at less cost feature this 8-page *Goodrich* catalog. Patented Grommet belts in standard and high capacity construction are featured. Helpful tables are given. (18)

VERSATILE TRACTORS. The various attachments for the Terratrac crawler line are highlighted in this brochure. The tractors are built with 10 to 13-in. track shoes, 25.8 to 30-hp. Fitted dozers, loaders, buckets, winches, etc. are furnished for a variety of jobs. (19)

MICA FLOWSHEET. The concentration of mica is discussed in this *Denver* bulletin. Different sizes and grades of mica are recorded, and details given for handling 12½ tph of feed that will contain about 25 percent mica, with particular concern given to separating certain sizes for further treatment as very fine filler material for paint, roofing and lubricants. (20)

ROD MILLS. How to meet increasing demands for higher specification aggregates is discussed in this new *Allis-Chalmers* bulletin on rod mills. It points out why this type mill is suited for sand crushing and grinding and gives layouts for mills with other data. (21)

MAY 1954

Please send more information on circled items described in this issue:

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58	59	60																

In addition I would like information on:

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¾-YD. CRAWLERS. All the basic components of the *Bay City* machine are dissected and discussed in this 20-page brochure. It is fully convertible to all attachments. (22)

RUBBER GOODS. Industrial rubber products made by *Carlyle Rubber* are shown with prices in this 24-page catalog: hose of all types, belting, dredge sleeves, boots, etc. (23)

FIRST AID KITS custom-designed to a particular industry's needs are offered in this *Bullard* bulletin. Unit first aid packs can be selected in any combination to fit the accident patterns of the specific field. Quantity purchases can be had with the company insignia imprinted on the kit. (24)

OSCILLATING CONVEYOR. Devised by *Gifford-Wood* to transport granular materials, the Oscilveyor is a vibrating conveyor. This bulletin gives details, drawings and tabular data. (25)

CRANE-EXCAVATORS. The heavy duty line built by *Wayne Crane*—a half-yard excavator, 12½ ton crane—comes with crawler, wheel or truck mounting, this brochure shows. (26)

MAGNETIC TRANSMISSION equipment built by *Stearns Magnetic* shown in this bulletin includes clutches, clutch-brakes and magnetic brakes. Applications and torque considerations are given, with other data. (27)

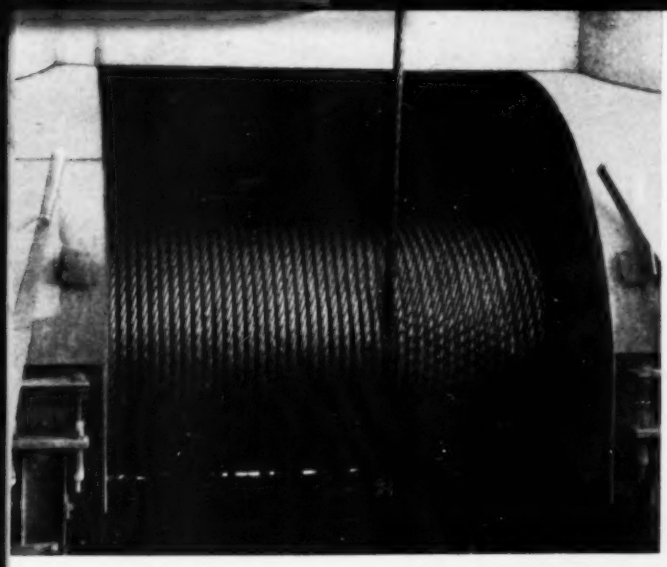
VIBRATING SCREENS of the positive mechanical-tray type for separation between two and 20 mesh are described in this *Stedman* bulletin. (28)

BUILD YOUR OWN WELDER. This 48-page *Hobart Bros.* booklet gives you step by step instructions, with photos, and plans, for building your own portable gas driven arc welder. (29)

SPOT METAL DEFECTS. Utilization of ultrasonic waves in testing shafts and other components of pit and quarry machinery for possible flaws is discussed in this *Sperry* literature. The device will reveal a defect through 30 feet of metal, pinpointing its location. (30)

SHOVEL-CRANE. Said to produce more than two ¾-yd. shovels in hourly tonnage, the new *Insley* type WB excavator comes with crawler, of self-propelled or lorry truck mounting, gas, diesel or electric power. (31)

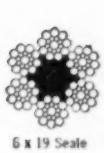
AGGREGATE SCREENS. Pocket-size 33-page *Hoyt Wire Cloth* booklet gives all details about the screen cloth line, plus tables and other data. (32)



OVERCOMING ABRASION—Wire rope takes a beating on some jobs by abrasion. It is squeezed in multiple layers under tremendous pressure on rotary drilling drums in the Texas oil fields. In the Northwest it drags under heavy logs.

In this Arizona mine it is scraped over rocks to operate a slusher. Everywhere it is rubbed severely on winches that do not wind smooth. Under such conditions Red-Strand 6 x 19 Seale wire rope will last longer and save you money.

What can you do better with 6x19 Seale Red-Strand?



6 x 19 Seale

6 x 19 Filler Wire

6 x 19 Seale has the same strength and weight as the more frequently used 6 x 19 Filler Wire, but the arrangement and size of the wires is different. You can see in the diagrams that the outer wires are fewer in number and larger in size. They provide ***high resistance to abrasion*** and greater wearing quality with somewhat less flexibility.

It's the perfect rope for certain jobs. Would it solve a problem for you? Be less trouble? Save more money? A Leschen man is near you. Perhaps he can help. Leschen is providing *longer-than-expected* wire rope service to industry everywhere.

Send for the 64-page Leschen Wire Rope Handbook. It describes Seale and all other Red-Strand wire rope constructions.

LESCHEN WIRE ROPE DIVISION
The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)
St. Louis 12, Missouri

LESCHEN
HERCULES Red-Strand
WIRE ROPE

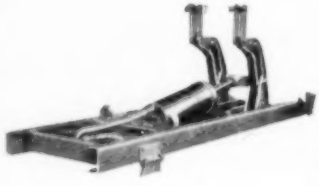
...Marion Heavy-Duty Bodies and Hoists lead the field in Performance • Dependability • Economy

It takes a mighty tough dump body to stand up under the severe abuse of day after day hauling and dumping. And it takes a powerful, heavy-duty hoist to give dependable, long-life dumping action.

Marion "Designed on the Job" bodies are made to stand abuse. No matter what kind of load, Marion Bodies are constructed to "take it."

With the Marion Heavy-Duty Hydraulic Hoist, there's guaranteed dependability . . . efficiency . . . and long-life operation — found in all Marion "Designed on the Job" hoists.

Find out for yourself why more and more truck owners are switching to Marions. See your nearby Marion distributor . . . or write direct . . . today.



There's no finer combination for handling your big hauling and dumping problems than a Heavy-Duty Marion Body and Hoist. Designed for compactness and strength, Marion HD hoists handle more work at a low, uniform oil pressure throughout the dumping cycle.

There are no high surge points any time. They have patented equalizing double arm lifts . . . combination oscillating cylinders and roller-type mechanisms. The heavy box sub-frames are constructed of steel for added strength and durability.

"Designed on the Job"

MARION METAL PRODUCTS CO.
Marion, Ohio, U. S. A.

MARION BODIES AND HOISTS

A complete line of standard and special Hydraulic Hoists and Dump Bodies To Fit Every Need

G. T. Harley

C. A. Arend Jr.

G. T. HARLEY has been appointed special consultant to the Potash Division of International Minerals & Chemical Corporation, as announced by A. Norman Into, vice-president in charge of the division. Mr. Harley joined International in 1940, and became manager of the New Mexico operations of the company in 1944. He was the second president of the New Mexico Mining Association and has held a number of offices in the A.I.M.E.

For 10 years Mr. Harley was a geologist for the New Mexico Bureau of Mines and served on the faculty of the New Mexico School of Mines.

CARL A. AREND JR., who succeeds Mr. Harley as manager of the New Mexico operations, joined International Minerals & Chemical Corporation in 1945 as a chemical engineer at its potassium chlorate plant in Columbia Park, Ohio. He was made superintendent of that plant in 1947. In 1949 he was transferred to the company's new potassium chemical plant at Carlsbad.

The following changes in the personnel of the Puerto Rico Cement Corporation, San Juan, Puerto Rico, have been announced:

JOSE R. BENITEZ, who was formerly general manager, was appointed treasurer of the board of directors and general manager of the Puerto Rico Glass Corporation.

HORACIO SUBIRA, who formerly served as promotion manager, is now general manager of the Puerto Rico Cement Corp.

CARLOS L. CINTRON, plant manager, retains this post and has been assigned the additional duties of assistant general manager of the corporation.

JOHN M. POMEROY, vice-president and plant manager at the Dragon Cement Company's Thomaston, Maine, operation, was recently elected fourth vice-president and a member of the executive committee of the Maine State Chamber of Commerce.

STEPHEN B. ELGGREN has been appointed vice-president of the Frontier Stone Products Corporation, Lockport, N. Y., of Frontier Dolomite Products Corp., and of John Irwin Construction Co., Inc. At the same time W. BURR BENNETT JR. was appointed sales engineer for the Frontier Dolomite Products Corp.

A. T. HERSHEY succeeds J. G. BRAGG as director of technical service for the Alpha Cement Company at Easton, Pa. He has been serving the company as a field engineer in charge of its Western Division. Mr. Bragg will retire in September.

HAROLD H. JAQUET has joined the staff of Pan American Sulphur Company, Dallas, Tex., as general manager and director of sulphur operations, according to Harry C. Webb, executive vice-president. Mr. Jaquet had been previously associated with Jefferson Lake Sulphur Company since 1933.

B. A. MACDONALD, former vice-president and assistant general manager of the Northwestern States Portland Cement Company, Mason City, Ia., recently retired from executive office, but remains on the board of directors. He has been affiliated with the company for 35 years in a number of important executive positions. His successor has not as yet been named.

The following changes in the personnel of the Aetna Portland Cement Company, Bay City, Mich., were announced recently by Ben W. Calvin, president:

E. A. HARRIS has been elected vice-president in charge of production.

L. B. THOMAS was named vice-president in charge of sales.

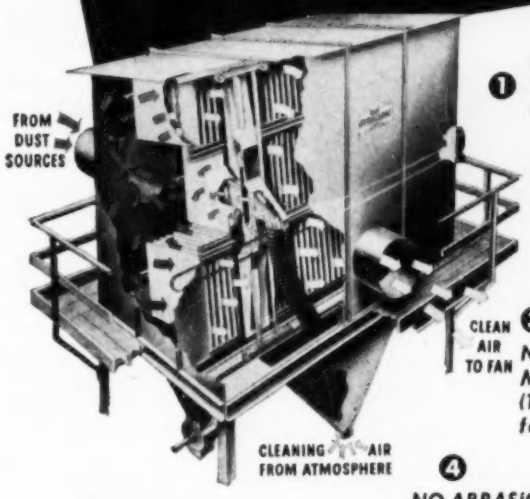
ALEX DEVENS has been appointed general superintendent.

PAUL BISCHOFF has been appointed chief chemist and research engineer.

JOSEPH A. BULLEN JR., operations manager for the Fountain Sand & Gravel Company, was recently presented with the Pueblo Junior Chamber of Commerce's Distinguished Service Award presented annually to the "young man of the year" who is judged to have contributed most to the community, state, and nation.

A native Puebloan, Mr. Bullen was cited for his efforts in civic affairs, welfare endeavors and professional leadership, as well as for his occupational status.

THE
DYNACLONE®
PATENTED
The ULTIMATE in Dust Filters



1. CONSTANT SUCTION at dust sources.
2. SELF CLEANING for continuous operation.
3. NO AUXILIARY MOTORS or BLOWERS (The main operating fan does the cleaning).
4. NO ABRASION of BAGS by the CLEANER.
5. LESS OVERALL HEIGHT and FLOOR SPACE.

HOW IT OPERATES

(a) Dust laden air is drawn in from the dust sources as indicated by the shaded arrows.
(b) It is diffused into the dust chamber by the baffle plate.
(c) It is then drawn through the fabric of the filter bags and is cleaned as shown by the clear arrows.
(d) Clean air passes out of the case and goes to the suction fan.
(e) Concurrently, the traveler moves back and forth across the dust wall registering successively with one bag at a time.
(f) The suction which exists in the dust chamber draws a blast of atmosphereic air through the bag in reverse directions and cleans that bag. (No shaking.)

Control your industrial dust better, for less — with the Sly Dynaclone. May we explain how?

SEND FOR BULLETIN NO. 102

THE W. W. SLY MANUFACTURING CO.
4745 TRAIN AVENUE • CLEVELAND 2, OHIO
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SLY PIONEERS & LEADERS in INDUSTRIAL DUST CONTROL

GUARANTEED!

TO PUMP MORE WATER

GORMAN-RUPP 125 M PUMP

and doing it on-the-job EVERY DAY!

NO OTHER PUMP, SIZE FOR SIZE, CAN EQUAL ITS PERFORMANCE

Our distributors are authorized to put a Gorman-Rupp Contractors' Pump on any pumping job, any time, anywhere, alongside any other make pump, size for size. The Gorman-Rupp pump is guaranteed to pump more dirty water more hours, using less gasoline and to prime quicker than any other self-priming pump. If it isn't the best all-around pump, our distributor will accept the return of the Gorman-Rupp pump and pay the user any installation expense incurred.

Only the utmost confidence in the product could justify this guarantee.

We can furnish you with any size of self-priming centrifugal pump ranging in capacity from 1½ in., 5,500 G.P.H. to the powerful 10 inch, pumping 240,000 G.P.H.

Ask for Contractors' Pump Bulletin No. 4—CP-11

GORMAN-RUPP PUMPS

SOLVE YOUR PUMPING PROBLEMS

GORMAN-RUPP
SELF-PRIMING
CENTRIFUGAL PUMPS

THE GORMAN-RUPP COMPANY
MANSFIELD, OHIO

R. W. Reedy

A speaker at the meeting of the Florida Section of the American Institute of Mining and Metallurgical Engineers, held on March 8 at Lakeland, Fla., was R. W. Reedy of the Kennedy-Van Saun Manufacturing and Engineering Corporation.

Mr. Reedy's address, entitled *Grinding of Florida Phosphate,* was concerned with the production of surface area for chemical reaction. He covered the types of equipment used to grind Florida phosphate rock, particularly units of his company's manufacture. According to Mr. Reedy, the first Kennedy Airswept system for grinding phosphate rock in Florida was installed in the American Agricultural Chemical Company's plant at Pierce. This unit, he stated, has averaged more than 44 t.p.h. at a fineness of approximately 51 percent minus 200-mesh.

WILBERT F. KING has been appointed sales manager of the Neville Lime Company, Pittsburgh, Pa., effective March 1. Mr. King served as secretary-treasurer of the National Mortar & Supply Company, Pittsburgh, for about 25 years until its consolidation with the National Gypsum Company in 1951.

A. T. GOLDBECK, director of research of the National Crushed Stone Association, Washington, D. C., recently participated in a three-day conference on work experience in higher education held at Antioch College.

The conference was called February 11, 12 and 13 to evaluate the college's famed study-plus-work plan, under which students regularly alternate classroom work with jobs secured for them in 33 states.

Mr. Goldbeck took part in a panel discussion to examine the relationship between job experiences and Antioch's course for engineers.

ARTHUR R. CAHILL has been elected vice-president and treasurer of International Minerals and Chemical Corp. of Chicago to succeed ROBERT P. RESCH, who will retire on July 1 after having been affiliated with the company since 1922. Mr. Resch will continue as a vice-president on special administrative assignments.

Obituaries

NORMAN H. GUELIG, 46, executive secretary and counsel for the Wisconsin Lime Producers' Association, died in a Chicago hospital recently after an illness of six weeks. He had practiced law in Milwaukee, Wis., and was a member of the Bar Association of that city.

ELMER H. GERAN, vice-president and treasurer of the New Jersey Gravel and Sand Company, Farmingdale, N. J., since 1927, and a former congressman, assemblyman, and U. S. attorney, died recently at his home. He was 78 years old.

FRED M. TOMPKINS, a department supervisor for the National Gypsum Company of New York, died on February 27 at the age of 42.

SAMUEL H. BALLAM, former superintendent and an employee of the Warner Company, Philadelphia, Pa., for 25 years, died on March 26 at the age of 65.

FLOYD D. HARRIS, 61, chief electrician at the Universal Atlas Cement Company, Independence, Kan., where he had worked for about 33 years, died at his home on February 9 of a heart seizure.

BENJAMIN FRED BROOKS, 59, a senior partner of Brooks Quarry & Construction Company, Kahoka, Mo., died recently after an extended illness.

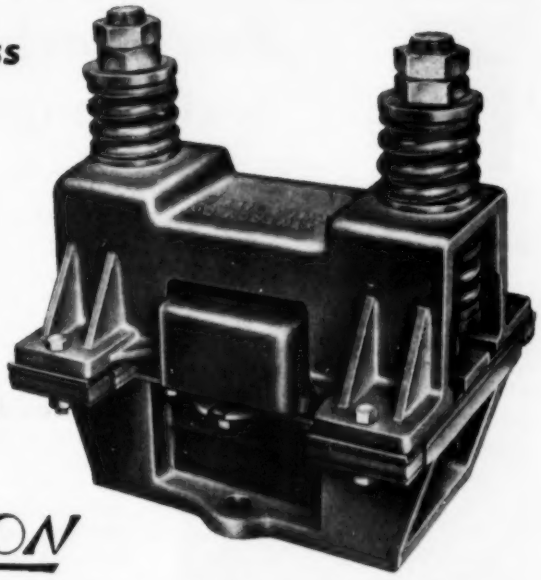
GEORGE C. BRITTON, retired manager of the Portland Cement Association's Philadelphia district, died on March 1. After having been associated with P.C.A. for 27 years, Mr. Britton retired in 1951, but he had remained in a consulting capacity. He was an authority on highway construction.

WALTER W. ROOP, operator of the Roop Quarries, Warrensburg, Mo., died on March 4 after several months' illness. He was 60 years of age.

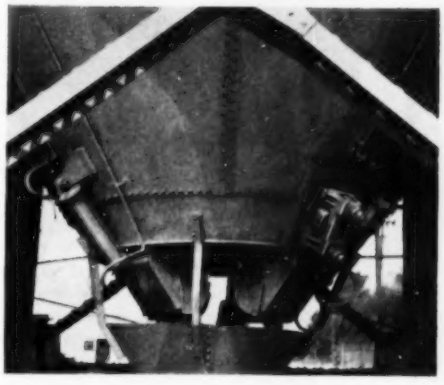
LAWRENCE E. DELLINGER, 60, a salesman for the Southwestern Portland Cement Company in Fairborn, Ohio, for the last 36 years, died recently at Dayton.

RUTHERFORD HAYES WEBSTER, founder and former operator of the Redlands Sand and Gravel Company, Redlands, Calif., died unexpectedly on March 6 at the age of 77.

It Costs Less To Move Bulk Materials Through Bins, Hoppers and Chutes with SYNTRON



ELECTRIC VIBRATORS



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Heavy-Duty Syntron Vibrator speeds flow of aggregate from huge ready-mix bin.

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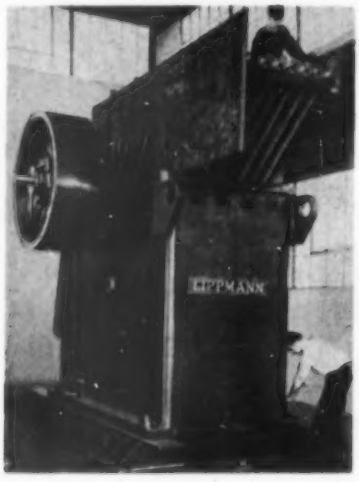
New Machinery and Equipment

(For more information, use card on p. 173.)

● Big Jaw Crusher

Largest of its kind, a 42x48 overhead eccentric jaw crusher has been added to the Grizzly-King line. It has a capacity of 1,200 t.p.h. at the largest setting, and will run about 800 t.p.h. at the 5-in. opening. *Lippmann Engr. Works* says. The



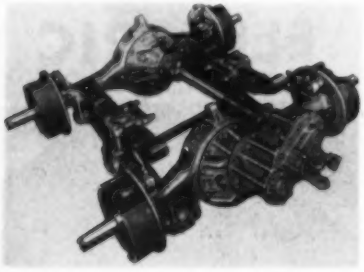
machine is fabricated with a special laminated steel design said to give extra strength and durability.

Larger rock sizes can be taken in the Grizzly-King, permitting the operator to space his blast holes farther apart with consequent savings in time and explosives, Lippmann says. Likewise, the crusher is said to have excellent control over the product size, thus lessening the need for additional secondary crushing. Vibration or lost motion is kept to a minimum, eliminating costly substructures, reducing power needs and maintenance, the firm says.

Circle No. 33

● Tandem Axle

Bridging the gap between present available models, a new tandem axle with a 32,000 lb. load capacity on the rear tires at the ground has been put into production by *Eaton Mfg. Co.* The new size meets the legal



maximum in 37 states. It has an inter-axle differential to assure equalized power transmission to the driving wheels even though wheel speeds may be variable due to road irregularities or differences in tire diameter. Designed especially for unfavorable conditions, the axles are engineered specifically for tandem operation and so are not subject to the stresses or complicated lubricating problems encountered by using conventional axles for tandem duty, Eaton says.

Circle No. 34

● Any Ford or Ferguson tractor becomes a versatile, highly-maneuverable materials handling machine with the addition of the Davis Pit Bull rig, a hydraulic unit with several interchangeable attachments — bucket, dozer, swing crane, etc. A special transmission gives four speeds in either direction. Direction can be changed without changing gears. The ⅝-yd. bucket shown clears 10-ft. 5-in., handles 2500 lb.

Circle No. 35

● Recorder-Controller

A new line of recording-controlling instruments has been introduced by *Fielden Instrument* for the recording and control of temperature,

strain, force, position, pressure, conductivity, etc. Four interchangeable units comprise the recorder. The instruments operate on the null-balance principle. Low first cost, low operating and maintenance costs and maximum flexibility result from the simplified unit assembly, Fielden says.

Circle No. 36

● Induction Motors

A complete new line of a-c squirrel cage induction motors in frame sizes under 326 has been introduced by *Allis-Chalmers.* Built to the new NEMA frame standards, the line includes open and totally-enclosed models, the latter in both fan-cooled

and explosion-proof styles. Designated Type G, the line retains all the important features of the AP line while capitalizing on new developments and the new design ratings to provide smaller motors than heretofore. Intake openings in the end shields will have far greater protection than in the old design, being located high enough on the bottom half of the shield to minimize the danger that incoming air may sweep in dust from the base. All continuous rated totally-enclosed motors in the new design, even the smallest integral hp sizes, are fan-cooled like the 5-hp. 215-frame shown.

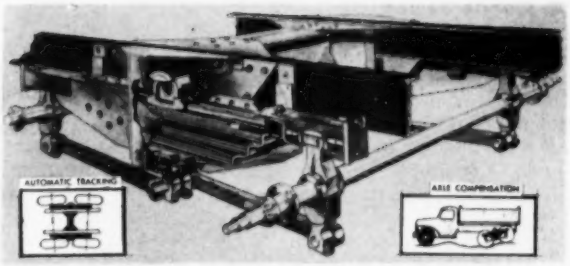
Circle No. 37

● Tandem Suspension Axle

Several interesting advantages are offered truck owners by a new tandem axle suspension system just introduced by *Truck Equipment Co.* Fitting all chassis without modification, the lightweight Tandem-Trac is easily installed on any truck, tractor or trailer, and can be transferred from one vehicle to another. Average weight is about 1,000 lb.

Able to guide wheels around curves and contours and align them automatically on straightaway, the TandemTrac gives easier steering, better fuel mileage and much longer tire life, the maker says. Loads are distributed automatically, 60 percent on the drive wheels when empty, 50-50 loaded, for bigger payloads. Variable rate springs, in three stages, reduce shock during unladen operations, adjust to maximum load needs. Rocking-chair bearing surfaces for suspension and axles eliminate the need for lubrication, cut maintenance, and adapt to every bump. The TandemTrac does away with load transfer and wheel hop caused by severe braking, adding considerably to operational ease and safety.

Circle No. 38



● Automatic tracking of the wheels is among the several features of this tandem suspension axle, described at left.

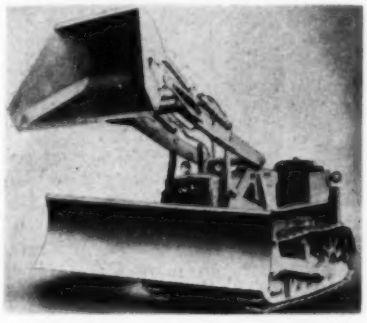
● Bin Level Control

An electronic signal has been developed by *Hewitt-Robins* to prevent the accidental overfilling or emptying of bins, silos, tanks and other storage units. It consists of a small radio transmitter housed in a rugged steel probe placed at the level where the flow is to be controlled. When the storage material rises and covers the probe or drops to expose it, the change in surrounding density distorts the signal being broadcast to a remote control unit. This sets off an alarm or actuates the mechanism that regulates the flow of material. The control cabinet can be placed 300 feet or more from the probe. A standard unit costs about $300.

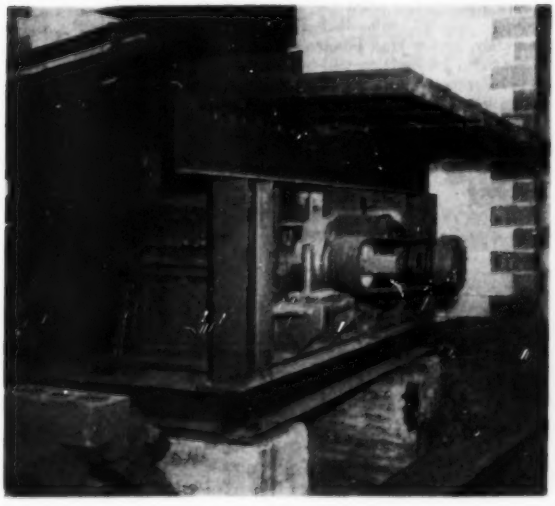
Circle No. 39

● Two Machines in One

A larger version of the Terra-Builder for all-around earthmoving and materials handling duty in the medium-size category has been announced by *American Tractor.* The unit has a ¾-yd. digging bucket-loader and a 7-ft. 4-in. heavy-duty angledozer or a 6-ft. bulldozer as well. The bucket is tapered so as to be self-cleaning in the stickiest clays. The dozer attachment has close-coupled, direct hydraulic linkage for maximum performance under heavy loads.



Circle No. 40



● Fluid drive corrects any motor overloads and any fluctuation in the load of this block plant hammermill. It has a Twin Disc Hydro-Sheave drive mounted on the output shaft of the 20-hp 1750-rpm motor to absorb shock loads and permit acceleration without overheating.

Circle No. 41

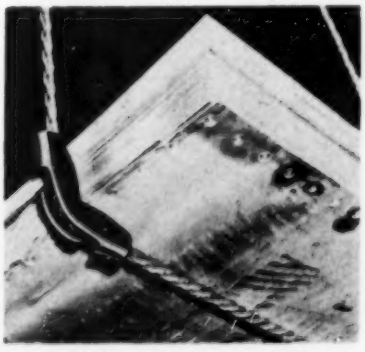
● Rotary Airlock Feeder

Designed for handling finely ground or granular abrasive substances, a heavy-duty rotary airlock feeder has been announced by *Prater Pulverizer Co.* It has a 12-in. diameter inlet and discharge. This new model PAV-12 is suitable for rotary dryers, coolers, dust collectors, precipitators, bins, hoppers, etc., operating at atmospheric or higher pressures. Elevated temperatures can be handled. In pneumatic conveying systems, the unit will function both as a feeder and airlock.

Circle No. 42

● Sling Protector

Wire rope sling users find two desirable qualities in a new gadget—a "saddle" that fits ropes in the ½- to ⅛-in. sizes. The cast bronze *Newco* fitting slips over the rope to eliminate 90 degree bends. It also protects the edges of loads such as gypsum board, concrete slabs, dimension stone, etc. Easily adjusted, it does not slide on the sling.



Circle No. 43

● Mobile Jumbo

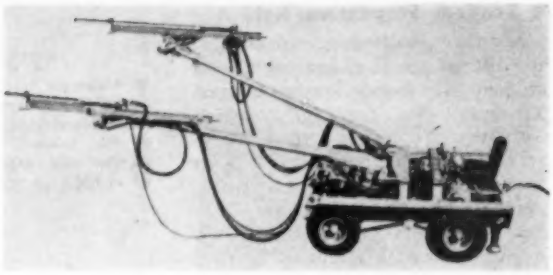
Without leaving his seat on the carriage, the operator of a new mobile jumbo can drill out a complete round in drift, quarry, tunnel, room or rock cut, *Gardner-Denver* says, announcing its new JSP Mobiljumbo. Hydraulic controls grouped in front of the operator give him remote control over both the travelling of the jumbo and the entire drilling cycle of each boom.

Jacks raise or lower the jumbo for stability while drilling. Drilling, positioned by hydraulic cylinders near the end of each boom, can be done up, down or on the horizontal. All positions lock hydraulically to stop creep. Steering the jumbo is done by separate air-motors for each set of wheels. Booms are available to drill faces up to 14-ft. high. Faces 25-ft. wide can be drilled off from a single Mobiljumbo setting.

● Hardened Castings

Less wear means less downtime advises *Calumet Steel* announcing a new wear-hardening chrome-ferrous

alloy for use in the making of pugmill paddles, conveyor rollers, mixer blades and the like. Called ZeVe-Seal, it is said to outwear special wear-resistant alloys three to one.
Circle No. 45



● The operator rides in comfort with this new Gardner-Denver Mobiljumbo drill. See story at left.
Circle No. 44

● Diesel Welder

A General Motors 67-hp. diesel engine features the newest addition to the Multi-Range line of arc welding machines built by *Hobart Bros.* The

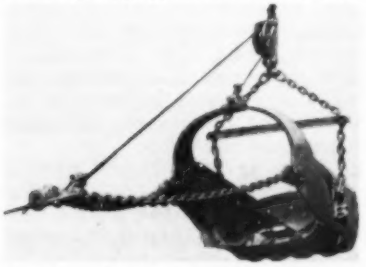
300-amp. machine has dual and remote controls, permitting the welder to make fine voltage-ampere adjustments right at the work without going back and forth to the machine. It has 1,000 combinations of voltage and ampere, separate excitation, and two-way ventilation.
Circle No. 46

● Water Suction Hose

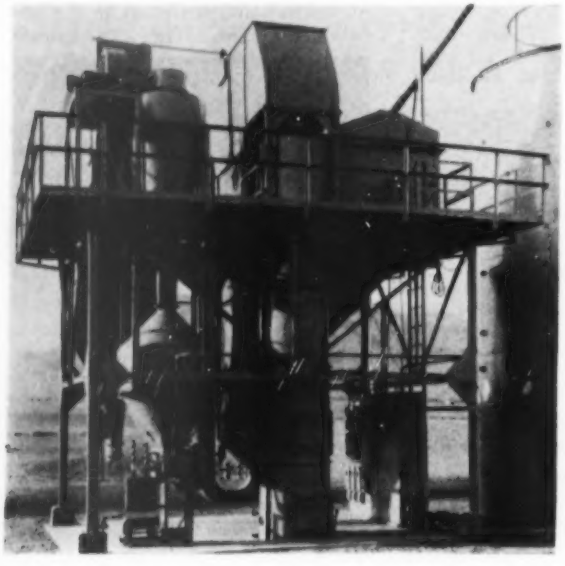
Both pressure and suction handling of water are possible with a new horizontal braided hose developed by *Quaker Rubber*. Two layers of braided rayon cord and a helix of spring steel wire reinforce this Revolc hose, made in sizes from 1¼-in. to 3-in. inside diameters. It is light in weight, will not collapse or kink, maintains full opening in any position, and can be grounded to eliminate static electricity.
Circle No. 47

● Dragline Bucket

A lightweight dragline bucket particularly suited to sand and gravel and clay digging has been announced



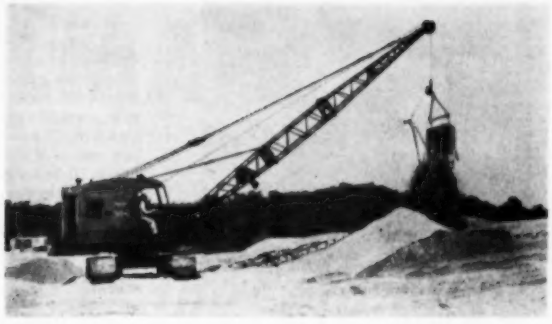
by *Page Engineering*. Its lips and toothpoints are cast of high manganese stel for maximum resistance to wear and shock. The unusually sharp teeth are mounted in bases cast integrally with the strong, thin lip, giving great digging ability with less deadweight and greater payload on each pass, Page says.
Circle No. 48



● Featuring the well-known Bradford furnace (gas or oil-fired), this new perlite processing plant has a means for preheating the ore when required, a special cooler that permits stacking the bagged product immediately, and a high efficiency dust collector following the regular cyclone to prevent atmospheric pollution. Shown is the 400 cu. ft. per hour Perlite Engineering Co. plant. **Circle No. 49**

● Four new open bowl tractor-drawn scrapers feature the Wooldridge line. Low center of gravity, high ground clearance, wide apron opening, the "boiling bowl" loading principle and positive full power forward pivot-tilt ejection are major design features. Heaped capacities range from 10½ to 25 cu. yd. **Circle No. 50**

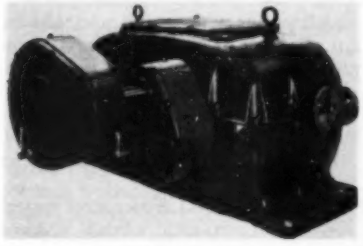
● Every dad — beg pardon, every child — should have one! Though it'll only crush cornflakes, this scale replica of a Cedarapids Pitmaster crushing and screening plant is built in metal, 1/24th the size of the original — and works! **Circle No. 51**



● Special heavy-duty equipment developed for this Bucyrus-Erie 22-B ¾-yd. crane-excavator give wider safety factors and increase machine life in rugged duty. They include a long frame crawler mounting and a heavier, stronger boom. **Circle No. 52**

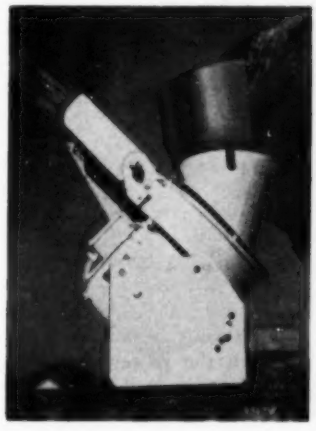
● All-Speed Drives

Accurate speed control, adjustable over a wide range is provided by the PIV variable speed drive, which transmits power positively, without slip, by means of a drive chain with self-forming metal teeth that engage with radial grooves in two pairs of



cone-shaped wheels, the ratio being changed by altering the effective diameter of the wheels. *Link-Belt* has recently expanded its line of PIV drives to eight sizes, ranging from ½ to 25 hp. capacity, with ratios up to 6:1, in 16 types, for horizontal and vertical mounting, with and without helical gears and integrally mounted motor.

PIV has many uses, such as the exact synchronization and timing of operations, reliable metering and proportioning, precise control and infinite variation of machine or conveyor speeds, or rapid speed changing under full load by manual, automatic or remote control. PIV automatic controls can be electronic, hydraulic, pneumatic or mechanical. **Circle No. 53**



● This beltless machine "throws" sand and stone into piles or bins at better than 40 tph. Fed by conveyor belt, it has an adjustable trajectory. Used in a washing plant, the Speedpiler removes excess water, Pettibone Mulliken says. **Circle No. 54**

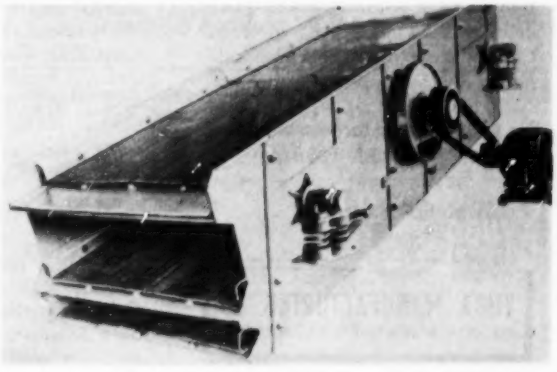
● Redesign Cab

Operator comfort, convenience and safety are emphasized in a new roomier, all-weather cab for the *Gar Wood* 75 excavators and cranes. Extruded rubber-mounted windows protect against weather and moisture

and fold back out of the way in summer. Rear and side panels open for further ventilation. The cab has a drop center roof design enabling its gantry to fold flush for lowest possible clearance. The 75 is a ¾-yd. excavator or a 20-ton truck crane in standard and heavy-duty models, featuring direct right angle drive, independent travel and power-actuated drum clutches. **Circle No. 55**

● Down a seven percent grade without conventional friction brakes! The Allison Torqmatic Brake, using oil from the drive, does all the braking work on this Euclid 4FFD. **Circle No. 56**

● These Bodinson vibrating screens can be cable suspended or mounted on a frame with a special self-aligning arrangement of springs and supports. **Circle No. 57**



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and washing plants

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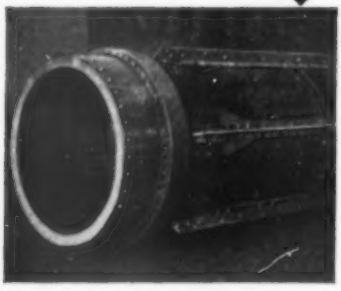

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● Big excavator production and small machine handling are combined in Link-Belt Speeder's new one-yard shovel-crane. It has a completely hydraulic control system and several other features. Comes crawler, truck or wheel-mounted, as a shovel or crane.

● One-Yard Excavator Has Modern Design

Combining the characteristics of a big machine with the advantages of smaller excavators, a new one-yard shovel-crane has been introduced by *Link-Belt Speeder* after four years development and 6,000 hours of test model operations. Its 53,000 lb. working weight (as a shovel) packs more strength than many heavier machines, the firm claims.

Adequate power, ground-hugging stability and extra-strength in all working components are major characteristics. Completely new from track to boom tip, the LS-98 has the well-known Speed-o-Matic control system, making it the first one-yard machine with a "true, complete power hydraulic control system", Link-Belt Speeder says.

This system combines faster working cycles and easier operation and joins with the power and stamina of the 98 to produce as much as 25 percent greater output than manually-controlled machines, according to LBS. Foolproof power steering and two-speed travel gear are standard. The new unit's track system has a patented self-cleaning design. Lower frame machinery is fully-enclosed and has 14-in. ground clearance.

Utilizing modern metallurgy, Link-Belt Speeder has been able to increase the strength of some parts as much as 50 percent without adding an ounce of weight. Precision manufacturing and modern mass production are combined in making the LS-98, resulting in true parts interchangeability and longer, trouble-free performance Link-Belt Speeder says.

The Speed-o-Matic control system replaces mechanical clutch linkage, eliminating over 150 different wear parts. Clutches are self-adjusting for heat and normal lining wear, and are interchangeable. Power load-lowering reversing clutches for *either or both* front and rear drums are featured, and the variable pressure control valve gives instant response and "feel of the load".

Circle No. 58

● Car Journal Lubricant

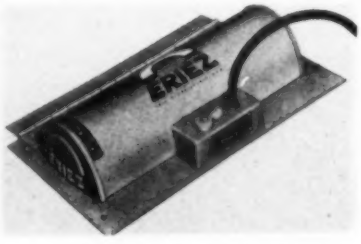
Designed for all types of railroad cars, a journal lubricant made by *Swan-Finch* has a consistency that enables it to stay in contact with the journal and be pushed from side to side without channeling. This Plumbago Hair Car Grease sheds water, dirt can be scraped from its surface, and ice will not form in the journal box in cold weather, Swan-Finch says.

Circle No. 59

● Tramp Metal Alarm

A completely automatic alarm system has been introduced for use in conjunction with any of the many *Eriez* magnetic separators. Activated by a sensitive ferrometer that measures the quantity of tramp iron accumulating on the magnet's surface, the alarm trips a light, bell or buzzer, as desired, or closes down the conveyor line. This makes it necessary to inspect and clean only when a predetermined amount of tramp metal has accumulated. The alarm may be set up remote from the magnet installation.

Circle No. 60



Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Employee Is Discharged

A reader asked this question: "If an employee fails and refuses to conform with political ideas of his employer, can such employee be discharged without any damage liability under federal laws?"

According to a higher court decision rendered only a few weeks ago, the answer is no.

For illustration, in *Kil v. McKethan*, 205 Fed. (2d) 425, the testimony showed facts, as follows: One Kil was the sales manager of the F. C. Stone Company, a corporation organized for the purpose of marketing crushed stone. Kil alleged that he was discharged because he refused to enter into a plan to pay certain moneys to certain contractors doing business with the State Road Department which purchased rock from the stone company. Kil sued for heavy damages and, contending that his discharge violated his civil rights, secured by the Fourteenth Amendment. The higher court refused to award Kil any damages, saying:

"Stripped to its basic essentials, plaintiff's (Kil's) complaint is that, as a result of an alleged conspiracy to raise funds for political purposes, he was wrongfully discharged from his employment because he would not assent to the plan. The Fourteenth Amendment does not have the effect of taking into federal control the protection of private rights against invasion of individuals. Whatever plaintiff's (Kil's) rights may be, they do not arise from the Constitution."

Blasting Liability

In the past I received many inquiries from readers as to the amount of damages a property owner may recover from a contractor who caused injuries to the property by blasting operations. This month a higher court rendered an important opinion which answers this important legal question.

For example, in *H. D. Youngman Contractor, Inc., v. Girdner*, 262 Pac. (2d) 693, it was shown that a road contractor used dynamite and other high-explosive substances for the purpose of making a ditch along a highway. The explosives and blasting caused the rock formation under

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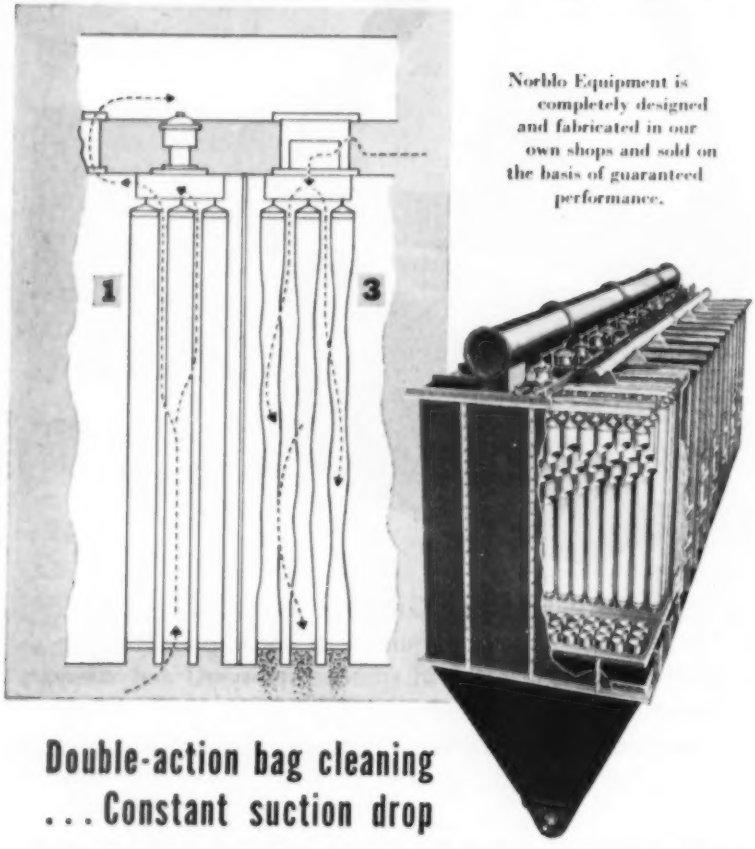

Norblo Equipment is completely designed and fabricated in our own shops and sold on the basis of guaranteed performance.

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1. Basic unit compartment houses 78 cylindrical bags, fully distended by upward inside air flow.

2. Variable cleaning cycle timing, adjusted to dust load, insures constant volume of air handled and constant pressure drop across arrester.

3. Shaking and cleaning involves only one compartment at a time. During short vigorous reciprocating shaking period, reversed air flow insures cleaning of bags but in no way interrupts suction drop.

4. Any compartment may be cut out alone, for bag repair.

Write for Bulletin 164-3 giving full description.

The Northern Blower Company

Engineered Dust Collection Systems for All Industries

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adjacent land to crack, give way in such a manner that the water in the wells on the land, which had for many years stood at the level of 6 ft. from the surface of the earth, to sink and go down to such a point that it is impractical to draw water from the wells. The owner of the land on which the wells are situated sued the contractor for damages.

During the trial the land owner proved that the land was worth $12,000 prior to the damage to his water supply, and that the reasonable market value of the land after the destruction of the water supply was $6,000. In view of this evidence, the jury held the contractor liable to the land owner for $6,000 damages. The higher court approved saying:

"The day after the blasting upon the highway, the artesian well ceased to flow and has not flown since. Plaintiff's (land owner) recovery should be measured by the difference between the fair market value of the land prior to and immediately after plaintiff's artesian well water supply was totally destroyed."

Guarantee Is Void

Another reader asked this question: "Some time ago I purchased a used steam shovel which proved very unsatisfactory to me. I took it back to the seller and threatened to sue him. Then the seller gave me a written guarantee. Now the seller refuses to comply with this guarantee. Can I sue and get damages?"

According to a late higher court decision, the answer is no. Few purchasers know that a guarantee given after the purchaser has accepted delivery of a machine or after he has signed the sale contract is void and has no legal effect.

For example, in *Budrow v. Wheatcraft*, 252 Pac. (2d) 637, the testimony showed that a dealer sold certain equipment to a purchaser. At this time the dealer gave no guarantee.

After taking delivery the purchaser took the equipment back to the dealer and complained and threatened suit about certain defects. The dealer then guaranteed to put the machine in good condition. The dealer failed to do so, and the purchaser filed suit against the dealer for breach of the guarantee. In holding the dealer not liable, the court said:

"It appears that appellant's (purchaser's) reliance is placed squarely on a warranty subsequent to the sale. If no representation of warranty was made at the time of the sale, a subsequent representation or agreement to warrant will be of no legal effect."

For comparison see *William A. Davis Company v. Bertrand Com-*

pany, 94 Cal. App. 281. In this case after a machine was delivered to the purchaser, the seller made certain written statements in his correspondence with the purchaser which constituted a warranty. In other words, the guarantee was made after the contract of sale was signed by the contracting parties. In holding the guarantee void, the court said:

"There was no consideration received or accepted which would sustain any new or additional warranty for goods already sold and delivered."

Therefore, the law is well settled that if the seller makes either an oral or written guarantee on merchandise or equipment after the original contract was signed, there is no liability, unless some new consideration or payment was made by the purchaser at the time the seller gave the guarantee.

Law of Mortgages

A reader asked this question: "How can a seller protect himself against financial losses if he sells merchandise on credit and takes a chattel mortgage from the purchaser who later sells the material?"

The answer is as follows: The seller is fully protected if he at once records the mortgage in the county in which the material is delivered.

Either a chattel mortgage or a conditional contract must be properly recorded according to the laws of the state in which the sale is made. It is settled law that a contract or a mortgage recorded in a single county in any state is effective in all counties in all states in the United States. Thus a seller of a properly and legally recorded chattel mortgage or conditional contract is protected against loss of money due. This means, of course, that one who purchases the encumbered material, or subsequently loans money on it, cannot be secure unless he examines the records in every county in every state in the United States.

Another important point of law is that either a chattel mortgage or a conditional contract of sale is valid and enforceable with respect to all persons who know of its existence, although it is not recorded. The legal object of recording chattel mortgages and conditional contracts of sale is to give notice to all persons that another holds a first and valid lien on the merchandise or property specified in the instrument. Obviously, therefore, either instrument is effective with respect to one who knows of its existence, regardless of whether it is recorded, because such person has "actual" knowledge of the lien.

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Also a chattel mortgage or a conditional contract of sale is valid in all states in the United States if it is recorded according to the laws of the state in which the merchandise or property is situated. This unusual phase of law is necessary for adequate protection to the seller; otherwise the seller would be compelled to record the instrument in all counties in every state in the United States.

Total Disability

Considerable discussion has arisen from time to time over the legal question: "If an injured employee gives inconsistent testimony regarding cause of his injury, can he be refused compensation under the State Workmen's Compensation Act?" Last month a higher court held that he can not.

For example, in *Powers v. U. A. C. Company,* 261 S. W. (2d) 514, an employee of a company was seriously injured when he was applying a hand brake on a railroad car. The brake wheel slipped and jerked, throwing him forcibly against the end of the car. The higher court awarded the employee permanent disability compensation although the employee gave inconsistent testimony. The higher court said:

"The evidence was that claimant (employee) did not lose his footing until the brake slipped. He grabbed onto the car after he fell into the end of the car. The inconsistencies between claimant's (employee's) testimony given at the hearing and in his deposition and the difference between his testimony presented a mere conflict of evidence involving the question of the credibility of the witnesses. It was for the commission to determine, under all the circumstances, what effect it would give to the evidence."

When Guarantee Is Void

A reader wrote as follows: "Our company very frequently buys used equipment. We have a great deal of trouble and controversy with sellers of used merchandise. Recently when we bought a used machine, the sale contract had a clause, as follows: 'It is understood between the buyer and the seller that this machine is being sold "as is".' Does this clause absolutely relieve the seller from all liability on defective equipment which proves unsatisfactory to use?"

After receiving this letter the writer reviewed late and leading higher court decisions pertaining to various kinds of guarantees on both new and used merchandise.

First, it is important to know that the higher courts in different localities hold that various and different kinds of guarantee clauses are a great deal more effective than an "as is" clause to relieve a seller of either new or used merchandise, machinery, and equipment from liability. However, the courts hold that under certain circumstances such a clause will protect or relieve the seller from liability to a purchaser who buys defective merchandise.

For illustration, in the leading case of *Findley Supply Company v. Downing,* 54 S. E. (2d) 716, the testimony showed that a seller verbally guaranteed that the used equipment was reconditioned and in good condition. The buyer purchased the equipment after inspecting and testing it. Within a few days the equipment developed serious defects.

In subsequent litigation the higher court held that as the buyer had signed a written contract which contained a clause that the equipment was being sold "as is", the seller could not be liable on any verbal guarantee, either expressed or implied.

For comparison, see *Leo Company v. Crary Company,* 147 Wis. 166, where a seller signed a written contract that contained a clause that the seller did "not guarantee the quality" of a machine, which proved to be worthless. The higher court refused

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Installed around your conveyor, the RCA Electronic Metal Detector inspects *all* of your product—detects *manganese* teeth *before* they jam or smash your crusher.

WHAT'S your prime source of crusher shutdowns—manganese dipper teeth, drill bits, tool-steel parts?

All of these hard-to-detect trouble makers can be readily detected by the RCA Electronic Metal Detector. Adjustable sensitivity—an important feature of RCA Metal Detectors—allows you to detect tramp metal which would damage your crushers. This feature eliminates unnecessary production stoppages caused by small pieces of metal passing through the detector.

The metal detector is easily wired to stop your pan feeder, then your conveyor. At the same time it can sound an alarm or spray-mark the tramp-metal area. Here is PREVENTIVE MAINTENANCE where it pays off *in direct savings!* No more burning out wedged tramp iron or replacing shafts, damaged or broken by pieces of tramp metal.

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to hold the seller liable in damages to the purchaser, and said:

"If it be conceded that the contract is one-sided, it must also be conceded that the parties had a right to make a one-sided contract if they saw fit."

In other words, this court clearly indicated that if a purchaser is so foolish as to sign a sale contract greatly to his disadvantage, and to the seller's advantage and benefit, the purchaser must stand the consequences. In the leading case of *Lumbrazo v. Woodruff*, 256 N. Y. 92, 175 N. E. 525, 75 A.L.R. 1017, the court said:

"Neither party was obliged to enter into this contract, and there is no public policy which prevents adult persons of sound mind making such agreements as they please, not prohibited by statute, or contrary to good morals."

Insurance Company Not Liable

At various times in the past I received letters and questions personally from readers of PIT AND QUARRY regarding their legal rights and protection under insurance policies, particularly policies that protect contractors and truck owners against damage suits for injuries caused by the operation of motor trucks. Just a couple weeks ago a higher court rendered a decision which very clearly covers this law. See *Johnson v. Royal Indemnity Co.* 206 Fed. (2d) 561. The facts of this case are that a contractor had a contract to furnish gravel from a pit for the construction of a highway. This gravel was to be dumped in a location designated by the highway officials. The contractor owned no trucks, but he made arrangements with the owners of different trucks to deliver the gravel at the price of $1.25 per yard for the first 4 miles and $1 per yard for each succeeding 4 miles. Some days the contractor had 10 trucks hauling gravel and other days 40 trucks were on the job. This contractor had insurance to cover all injuries to employees and persons injured during his operations.

One day a truck driver named James, who drove for a truck owner, named Pete, had an accident causing injuries to the occupant of a passenger car, named Johnson. The injured person, Johnson, sued the contractor to recover damages; and, in turn, the insurance company that held the policy to protect the contractor became involved.

During the trial the court had the testimony that the contractor did not own the truck that injured Johnson, and further that the driver of the truck was paid by James, and not by the contractor. Hence, the higher court held that the insurance policy held by the contractor could not protect either the contractor, the owner of the truck, nor its driver against the damage allowance to Johnson. In other words, Johnson now may sue the contractor, the owner of the truck, and the driver; and he may recover damages from any or all these persons, depending upon the testimony as to whose negligence caused Johnson's injuries when the gravel truck collided with his passenger automobile.

Quite obviously, the insurance company cannot be expected to assume the burden of the liability since the insurance policy held by the contractor contained no provisions or clauses giving protection to the contractor, the owner of the truck, or its driver. Nevertheless one of these parties, or all of them, must pay damages to Johnson if his contentions are proven to the effect that his injuries resulted from negligence of the driver of the gravel truck. Moreover, these persons must pay the expenses of the suit, lawyer fees and the like. If the policy had been written to protect these persons, the insurance company would at its own expense defend the suits and pay all allowable damages.

ON YOUR BOOM MACHINE

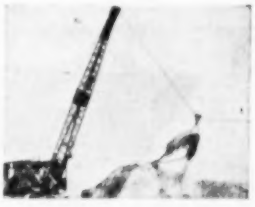
SAUERMAN SCRAPER

Dragline capacity is increased up to 50% or more on many jobs when a Crescent Scraper is used. Cast like the regular bucket, it digs into and gathers the load with the ease of a plowshare, hauls at ground level and dumps automatically when lifted. The dragline never lifts the loaded bucket, hence it is capable of handling a scraper of larger capacity than the regular bucket or clamshell.

To dig from a river, deep pit or soft area beyond the reach of the boom, the Crescent is hung from a trolley that rides on a track cable. The cable extends from the boom tip to an anchorage. Digging, hauling and discharge proceed as in the casting operation. Following discharge, the scraper is lifted and gravity-returned to the excavation point by merely tightening the track cable.

Sauerman engineers will quote you on the largest size Crescent Scraper your dragline can handle. Just give us the make and model number of your machine.

Above: Boom machine has a boom length of 110 feet and uses a 4-cu. yd. Crescent scraper, replacing a 2½-cu. yd. dragline bucket.



Above: A 1½-cu. yd. Sauerman Crescent used with a 1-cu. yd. dragline is lifted clear of the levee and returns to the borrow pit by gravity at 1500 fpm.

Write for Field Report 219, Scrapers with Boom Machines and Catalog J, Scraper Buckets

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Construction men, dump truck operators, and general builders are choosing Converto by an ever increasing margin. These are the men who have helped in the designing of the complete line of medium and heavy-duty hoists and bodies. They know that the rugged construction and versatile design of these units means longer, more trouble-free life. Converto hoists and bodies are flexible — easily adapted to perform special jobs.

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Peace Dale, R. I.

Traffic News

CENTRAL TERRITORY RAILROADS
Freight Traffic Committee

Docket 90327 (1)—Proposed to establish on stone, crushed, in bulk, in open-top cars, rate of 133 cents net ton from North Baltimore, Ohio, to Monroe, Mich. Minimum weight of car, 90 percent of the marked capacity, except that when loaded to full cubical or visible capacity, actual weight would apply.

Docket 90328 (2)—Proposed to establish rate of 110 cents per net ton on crushed stone and stone screenings from Annandale, Pa., to Girard, Pa., to apply on Pennsylvania intrastate traffic. This is on open-top cars, minimum weight 90 percent of marked capacity of the car, except that when car is loaded to cubical or visible capacity, actual weight will apply.

Docket 90408 (2)—Proposed to establish rate of 120 cents per net ton on stone, crushed, in bulk, in open-top cars, carloads. Minimum weight of car 90 percent of marked capacity, except that when car is loaded to full visible capacity, actual weight will apply from Monon and Francesville, Ind., to New Buffalo, Mich.

Docket 90413 (1)—Proposed to establish on crushed stone, carloads, when moving in lots of four or more cars from one consignor to one consignee, on one bill of lading on the same date from Greenfield, Ohio, to Gregg, Ohio, 70 cents; and to Givens, Ohio, 89 cents net ton. This applies only on Ohio intrastate traffic in open-top cars.

Docket 90424 (1)—Proposed to establish rate of 190 cents per gross ton on stone, fluxing, furnace or foundry, melting or refractory, unburned, in bulk, in open-top cars, carloads, from Durbin and Woodville, Ohio, to Lima, Ohio, in bulk, in open-top cars.

Docket 90422 (1)—Proposed to establish rates on lime, common, hydrated, quick or slaked, carloads, from Ludington, Mich., to the following points:

	15-ton Carload	25-ton Carload
Evansville, Ind.	34 cents	29 cents
Indianapolis, Ind.	32 cents	25 cents
Marion, Ind.	31 cents	24 cents
Muncie, Ind.	32 cents	25 cents

Docket 90429 (2)—Proposed to establish rate of 213 cents net ton on limestone, agricultural, not ground

or pulverized, unburned, in bulk, in open-top cars, carloads, minimum weight 90 percent of marked capacity of the car, from Narlo and Maple Grove, Ohio, to Middlebury and Shipshewana, Ind.

Docket 90431 (2)—Proposed to establish a rate of 338 cents per net ton on dolomite, roasted, refractory dolomite, in granular form, untreated or treated, clinkered and/or burned to a dead state, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible capacity, actual weight will apply from Chicago, Ill., to Kokomo, Ind.

Docket 90437 (1)—Proposed to establish rate of 282 cents per net ton on dolomite, roasted, refractory dolomite, in granular form, treated or not treated, clinkered and/or burned to a dead state, from Durbin, Ohio, to Fernald, Ohio. Minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible capacity, actual weight will apply.

EASTERN RAILROADS

General Freight Traffic Committee

Bulletin N 1609-15—Proposed to issue a rate of $2.10 per net ton to meet motor truck competition on limestone, broken or crushed, also natural ground or pulverized, in closed cars or in open-top cars protected by tarpaulin or other protective covering, minimum weight 40 tons from Falls Village, Conn., to Newburg, N. Y. This rate is subject to ExParte 17-5B increase.

Bulletin N 1609-16—Proposed to establish following rates on limestone, natural, ground or pulverized, carloads, minimum weight 30 tons, from Martinsburg and Engle, W. Va., to the following points:

Kingston, W. Va.....$3.55 per net ton
Marfork, Hazy Creek, Whitesville, Ameagle, Kayford No. 2, Republic No. 2, Prenter, and Blue Pennant, W. Va. .....$3.69 per net ton
Ridgeview, W. Va.....$3.83 per net ton
Cameo, Hampton Mines, Kelly, Barrett, Monclo, and Robinhood, W. Va.....$3.97 per net ton

Above rates not subject to ExParte 175-B increase.

Bulletin C 1609-17—Proposed to establish through rate of $7.28 per net ton in open equipment and $7.75 per net ton in closed equipment on ground limestone from Bloomington, Ind., to Sweetwater, Tex. Rate subject to ExParte 175-B increase; minimum weight 30 tons.

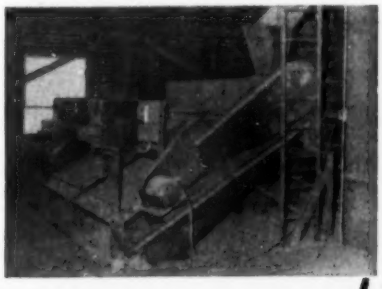
Bulletin N 1614 M—Proposed to issue rate of $1.31 per net ton on slag, commercial, crushed, in bulk, in open-top cars, minimum weight 90 percent of marked capacity of car from Donora and Monessen, Pa., to Waynesburg, Pa. This rate is to be issued to meet motor truck competition and is subject to ExParte 175-B increase.

Docket C 1606-4—Proposed to establish a rate of 57 cents per 100 lb. on dolomite, roasted, refractory dolomite, in granular form, treated or not treated, clinkered or burned to a dead state, minimum weight 90 percent of marked capacity of car, or of container loading limit when loaded in containers with a loading limit of 167,000 lb., except that when loaded to visible capacity, actual weight will apply from Narlo and Maple Grove, Ohio, to Shawinigan Falls, Quebec. Rate is subject to ExParte 175-B increase.

Docket N 1611-9—Proposed to establish a rate of $5.58 per net ton on crushed stone and screenings (other than agricultural limestone or ground limestone, unburned, fluxing or firestone or stone coated with oil, tar, asphaltum or other bituminous material), in bulk in open-top cars, minimum weight 90 percent of marked capacity of car in straight or mixed carloads from Glen Mills, Pa., to Belle, W. Va. Rate subject to ExParte 175-B increase.

FlexElex

ELECTRIC HEATING



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Already proved by years of profitable operation under tough conditions in the clay products field, the Leahy-FlexElex combination assures accurately sized fines at full screen capacity day after day, with reduced labor costs and longer jacket life. The composite advantage is amortization of the FlexElex cost in a matter of months.

Send for Bulletin 15-J.

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"Our trucks have a forty mile county road logging haul over adverse grades, each truck making two complete round trips each working day. Our shop foreman in charge of maintenance, reports that with the use of LUBRIPLATE Lubricants there has been a minimum of truck down time and replacements of bearings and gears. The double reduction gears with LUBRIPLATE APG-140 has shown a saving of fifty per cent over previous operations."

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trade notes

H. A. Barber, vice-president of Barber-Greene Co., Aurora, Ill., has been elected president following the resignation of W. B. Greene, who will continue as chairman of the board of directors.

As president, Mr. Barber will assume active leadership of the company he joined in 1933 as a field service engineer.

H. A. Barber

W. B. Greene

Mr. Greene, who with the late Harry H. Barber started the company in 1916, has been president since 1945.

Other officers elected were: S. E. Faircloth, E. H. Holt, J. D. Turner, E. E. Herting, and R. C. Heacock as vice-presidents; J. M. Spence as treasurer, assisted by Urban Hipp, and W. A. Greene as secretary, assisted by F. J. Merrill.

D. A. Clarke has been appointed assistant manager of the Indianapolis, Ind., plant and sales division, of Bemis Bro. Bag Co., St. Louis, Mo. He joined Bemis in 1938.

Coast Metals, Inc., of Little Ferry, N. J., announces the election of George S. Mikhalapov as president, to succeed John P. Rutherfurd.

Mr. Mikhalapov started his career with Stone & Webster in 1926, working on the design and construction of central power stations and industrial plants.

In 1951 he became affiliated with the Knolls Atomic Power Laboratory of General Electric, directing the engineering development of equipment and processes necessary to apply atomic energy to the generation of power for the nuclear-powered submarine.

Newark Wire Cloth Co., Newark, N. J., announces with regret the passing of its representative, John F. Berger of Trenton, N. J., at the age of 63.

Mr. Berger, who had over 40 years experience in the wire cloth field, and was widely known and liked in the trade, represented Newark in the Trenton area and a part of northeastern Pennsylvania.

GMC Truck and Coach Division, Pontiac, Mich., which pioneered the development and use of automatic transmissions for the trucking industry, has written another chapter in this field by announcing a "Twin Hydra-Matic" for heavy duty GMC trucks.

The new engineering development, combining two rugged truck Hydra-Matic transmissions into one unit, now provides truckers the proven efficiency and economy of the famed Hydra-Matic drive in the light, medium and heavy GMC trucks.

The decrease of driver fatigue and the saving of time through the faster automatic shifting will mean a more efficient shipment of goods over the highway for both shippers and operators alike.

Clark Equipment Co., Buchanan, Mich., manufacturers of industrial materials-handling trucks, construction equipment, and heavy automotive components, has started construction on a new manufacturing plant located on the outskirts of Benton Harbor, Mich. The new building, scheduled for completion by the end of 1954, will be used as a manufacturing plant for a new line of tractor shovels and for power shovels now made in the present Benton Harbor plant.

Clark has also established a "Ross Carrier Division" for its Ross line of straddle carriers which it will continue to manufacture at the present Benton Harbor plant. A. H. Peirce has been selected as division manager, and Roger Spencer will continue as chief engineer. Jack W. Ross will supervise sales information activities for the new division from Benton Harbor.

LeTourneau - Westinghouse Co., Peoria, Ill., wholly-owned subsidiary of Westinghouse Air Brake Co., is establishing an operation in Brazil to produce LeTourneau-Westinghouse parts and some earthmoving machines.

It is named Tratores do Brasil S. A. (Portuguese for Tractors of Brazil), and will be located near the industrial city of Campinas, about 60 miles from Sao Paulo.

Alfranio A. Ferreira, who is currently the LeTourneau-Westinghouse representative in Brazil, will be president. Willard Arnold, and Charles Propes, from the Peoria plant are going to Brazil to serve the new company. Mr. Arnold will be director-secretary, and Mr. Propes will superintend plant construction, set up manufacturing operations and assist in determining the initial products to be manufactured.

Walter C. Clayton, formerly western sales manager for the Dart Truck Co., St. Louis, Mo., has been appointed southern sales manager. He has been with Dart for over 20 years.

Mark Kasper, who is moving from Minnesota to Los Angeles, Calif., replaces Mr. Clayton as western sales manager.

G. A. Profita has been named regional manager of the manufacturing department of the Boiler Division of The Babcock & Wilcox Co., New York, N. Y. Previously he had been co-ordinating manufacturing and production activities at the Wilmington, N. C., and Brunswick, Ga., plants. In his present position his work will embrace these plants in addition to those at Alliance, Ohio, West Point, Miss., and Paris, Tex.

G. A. Profita

J. Emmett O'Malia

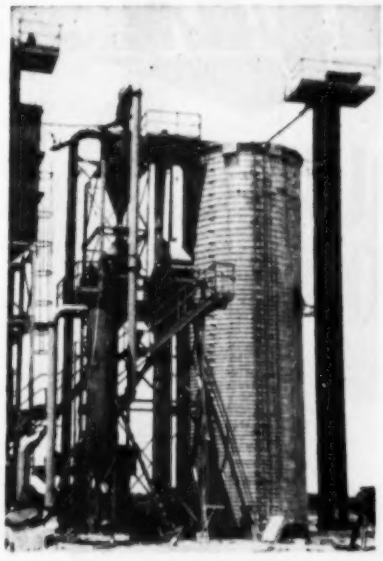
J. Emmett O'Malia has been appointed supervisor of sales engineering for Chrysler Marine and Industrial Engine Division, Detroit, Mich. He has been with the division since 1943 and during this period has been active in expediting, pricing, specifications, and sales and application engineering.

HEAVY stuff in N. & F. Silo becomes LIGHT

Raw, crushed perlite is moved through the 16 x 50 foot silo which we erected at the Linden, N. J., plant of the Great Lakes Carbon Co. Perlite is heavy. It weighs 90 lbs./cu. ft. After being sintered, the perlite becomes light-weight aggregate.

You are probably concerned with the handling of other kinds of flowable bulk materials—cement, clay, coal, grain, limestone, ore, sand, wood chips—or any other of the more than 80 varieties for which Neff & Fry Silos are used.

If so, obtain the facts about our silos. We'll be glad to send you interesting literature and answer your questions.



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Sprague & Henwood's "ORIENTED" Diamond Bits

Cut Faster Last Longer Cost No More

Most Economical Diamond Bits Ever Produced

After proving in our own world-wide contract drilling operations that Sprague & Henwood Oriented Diamond Bits (in which each individual diamond is set with its hardest edge or "vector" toward the work) cut much faster and last much longer than when diamonds are set at random, we made them available to other users and THOUSANDS are now cutting costs for diamond-drill operators throughout the United States and many other countries.

Specialized equipment and large-scale production enable us to furnish them in a wide variety of types and sizes, with either cast- or powdered-metal matrices, at no advance in price; making them the most economical diamond bits ever produced.

Bulletin 320 illustrates and describes all types and gives complete working data. Write for a free copy and tell us about your diamond drilling requirements. Our experienced executives welcome opportunities to make money-saving suggestions.

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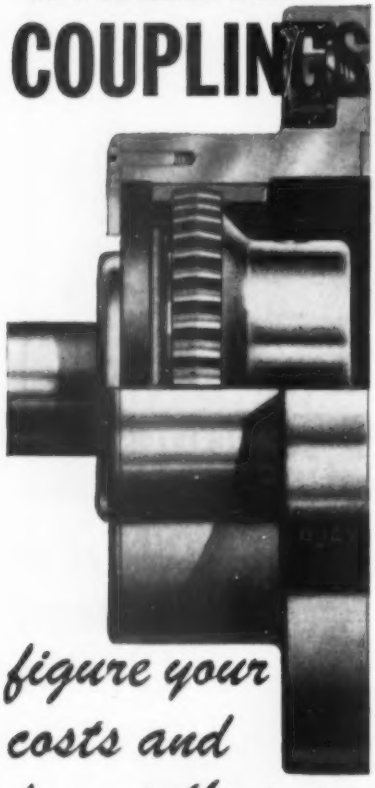

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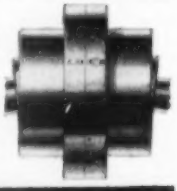
One shutdown of your yard or plant makes the extra cost of an Ajax Dihedral Coupling insignificant!

Seals keep lubrication in and abrasive grit out.

If you have misalignment trouble you can't afford to be without Ajax Dihedral Couplings. Tell us your troubles.



AJAX FLEXIBLE COUPLING CO. INC.
WESTFIELD, N. Y.

The board of directors of the Nopco Chemical Co., Harrison, N. J., has elected Thomas A. Printon chairman of the board as well as president of the company. As chairman of the board, he succeeds Charles P. Gulick. In recognition of Mr. Gulick's long and distinguished service to Nopco, the board designated him as honorary chairman of the board.

Mr. Printon has been with Nopco since 1922. He has served as a director of the company since 1936, and has held the office of president since 1949.

Thomas A. Printon

Dr. Joseph Remenyi

Dr. Joseph Remenyi has been appointed chief design engineer of Waldrip Engineering Co., Hollydale, Calif. He is a native of Czechoslovakia, and was formerly associated with the Skoda works. A specialist in highly-stressed parts for heavy equipment, Dr. Remenyi holds many patents in Europe on various types of crushers, including a roll crusher which has both horizontal and vertical motion.

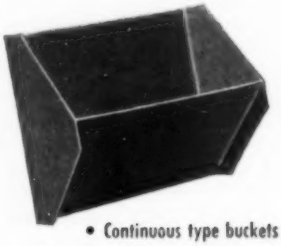
Freeman Gates, former assistant production manager for Consolidated Rock Products Company of Los Angeles, has been named manager of the Waldrip Aggregate and Mining Machinery Division, which is presently introducing the Latture Concave-Convex Roto-Crusher to the rock and gravel trade.

J. Joseph Kelleher, former assistant director of sales, has been appointed sales manager of the Explosives Department of Hercules Powder Co., Wilmington, Del. He joined the company in 1929.

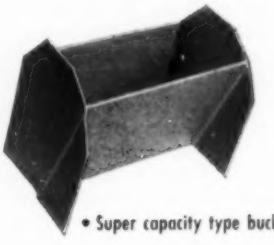
West Coast Engine and Equipment Co., 1077 Eastshore Highway, Berkeley, Calif., has been appointed distributor in the San Francisco and northern California area, and the southern counties of Oregon, by Osgood-General, Marion, Ohio. Frank Johnson, formerly division sales manager of Osgood-General sales in California, has joined the staff of West Coast Engine and Equipment Co., and will direct sales.

RUGGED AND DEPENDABLE AT low cost

• Salem type buckets



• Continuous type buckets



• Super capacity type buckets

Standard high quality steel elevator buckets are available in all styles, types, sizes and gauges for replacement as well as new installations. For real economy and immediate service, get acquainted with the Standard line today.

The Standard Metal Mfg. Co. SINCE 1921

Write for new catalog showing the complete line of Standard buckets and prices.

STANDARD METAL MFG. CO.
111 Center St., Malinta, Ohio

The Lincoln Electric Co. of Cleveland, Ohio, has added three men to its field staff of application engineers for servicing industrial users of arc welding.

Jack Jaso, an engineering graduate of Cornell University, has been assigned to the Chicago district. Walter Rockway is serving the Cincinnati district; and Chester Shira is an application engineer for the Jacksonville, Fla., district.

Russel C. Burns, a 20-year sales veteran of International Harvester Co., Chicago, Ill., has been appointed supervisor of motor truck fleet sales.

R. H. White, former manager of the Tulsa, Okla., motor truck district, has been named manager of the new Lubbock, Tex., district.

Other sales personel changes announced include the transfer of M. S. Howard, assistant manager at Sweetwater, Tex., to Lubbock in the same capacity. R. L. Tracy, branch manager, Los Angeles district, is promoted to assistant manager of the Oakland district.

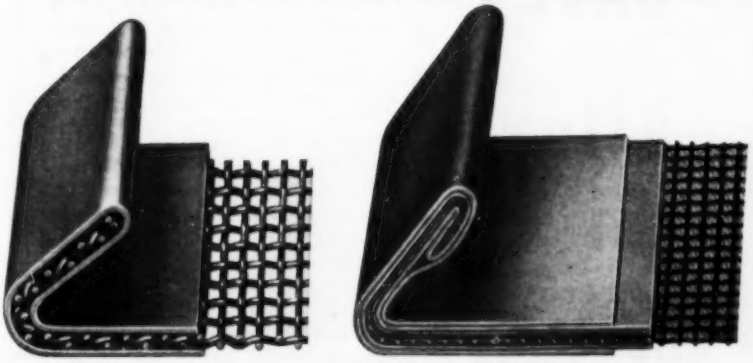
James Bruce, U. S. ambassador to Argentina from 1947 to 1949, has been elected a director of Fruehauf Trailer Co. When he resigned the ambassadorship in September, 1949, he helped set up the Mutual Assistance Program, on which he worked until May of 1950. His experiences in Argentina are related in his recently published book *Those Perplexing Agentines.*

James Bruce

Arthur M. Grasse

The election of Arthur M. Grasse as vice-president in charge of industrial products of the Goodman Manufacturing Co., Chicago, Ill., has been announced by William E. Goodman, president. Mr. Grasse, associated with Goodman for 33 years in various divisions of the business, has been manager of its Industrial Manufacturing Division. He will continue in charge of this division as well as the newly-acquired Diamond Iron Works line of crushing, screening, and handling equipment for rock and gravel.

Tyler Screen Sections for All Makes of Screening Machines!



Screen sections of Tyler Woven Wire are fabricated for all makes of vibrating screens in any mesh or metal. They are made up with hook-strip or bent-edge construction to suit the machine on which they are to be used.

Tyler hook-strips make possible stretching and maintaining the screening at drum-head tension, which is essential for successful screening and long screen life.

THE W. S. TYLER COMPANY
CLEVELAND 14, OHIO
Manufacturers of Woven Wire Screens and Screening Machinery

It's "BOOM and BUST!"
when you hit rocks with the
"Cape Ann"
FORGED
STEEL DROP BALL

RUGGED DESIGN GREATER IMPACT ECONOMICAL

The "Cape Ann" Forged Steel Drop Ball is standard equipment in up-to-date quarries.

It has a forged connecting link, protected by deep recess, adaptable for swivel or shackle. Strong alloy steel pin. Low cable replacements. Furnished complete as shown.

2000 to 12000 lbs.

Write Today for Full Details

CAPE ANN ANCHOR & FORGE CO.
Gloucester • Massachusetts

SAVE
ON
Alloy Bits
WITH NEW
SUPERLOY Alloy Bits

Forged from an entirely new alloy of steel, exclusive with Cyclone, new Superloy Alloy cable drill bits deliver alloy bit performance, *plus*. Initial tests indicate up to 25% longer drilling. BUT, they are priced *much lower* than you would expect. Now ready for immediate delivery. Order from your Cyclone dealer, write or send coupon for prices.

FREE
Complete Information

New Cyclone cable tool catalog-manual . . . most complete ever assembled . . . simplified tables . . . use information . . . on-the-job instructions . . . bit heating and dressing . . . all indexed, easy to use.

The SANDERSON CYCLONE DRILL CO.
ORRVILLE, OHIO

☐ Send Prices on new Superloy Alloy Bits.
☐ Send Free Copy of new Tool Manual.

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

CYCLONE

CABLE DRILLS AND TOOLS

J. Ross Arnold, former district sales engineer at the Pittsburgh office of Link-Belt Co., Chicago, Ill., has been appointed district manager at Birmingham, Ala. He joined Link-Belt in 1937.

John D. Riley, formerly of the Newark, N. J., office is the new district manager at Cleveland, Ohio. He started with Link-Belt in 1934.

Harry G. Anderson, who has been district manager at Birmingham, replaces Mr. Riley at Newark. He started with the company in 1937.

Claude W. Mottinger, purchasing agent for the Rubber Division of Hewitt-Robins, Inc., Buffalo, N. Y., has been appointed to the newly-created position of director of purchases for the entire company and will be responsible for overall purchasing policies.

Succeeding Mr. Mottinger as purchasing agent for the Rubber Division is Robert C. Estes, who joined Hewitt-Robins in 1937 and has been assistant purchasing agent since 1950.

L. G. Currie of Canton, Ohio, has been appointed a district sales manager by the Marion Power Shovel Co., Marion, Ohio He will head Marion's district 116, which covers the southern part of Indiana and Illinois and parts of Kentucky.

Joy Manufacturing Co., Pittsburgh, Pa., has announced the opening of a new district office at Cleveland, Ohio. Howard E. Butters, formerly district manager in St. Louis, Mo., has been appointed district manager at the new Cleveland office, with headquarters at 2410 Terminal Tower.

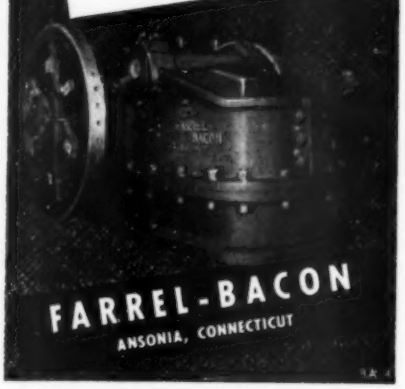
Wilbur E. Combs, who has been affiliated with the United States Rubber Co., N. Y., N. Y., since 1945, has been appointed assistant manager of sales development in the mechanical goods division. He was formerly merchandising manager of the New York Belting and Packing Co., Passaic, N. J.

Site preparation work for the new Caterpillar Tractor Co. plant at Decatur, Ill., has begun according to an announcement by vice-president T. R. Farley.

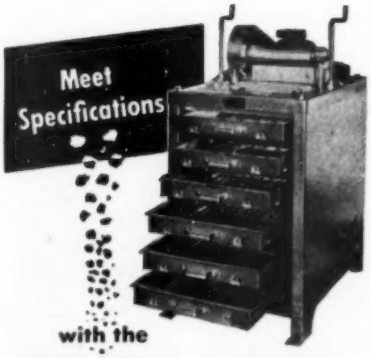
The manufacturing building is to cover an area 880 by 830 feet with approximately 730,000 square feet of floor area and similar in design and appearance to the building now in use at Joliet, Ill. The office building also is to follow the general pattern of the office building at the company's Joliet plant.

FARREL-BACON JAW CRUSHERS
SIZES 60"x48" to 10"x7"

Optional design features include: (1) Mechanite frame, sectionalized when necessary; (2) removable water-cooled bearings; (3) improved design of swing-jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive. *Write for further details or engineering assistance.*



FARREL-BACON
ANSONIA, CONNECTICUT



with the

Gilson Testing Screen

The GILSON Screen cuts out error and guesswork in meeting sizing specifications for crushed stone, gravel, slag, coal, ores, and similar materials.

You can own and maintain a GILSON Screen for only 65-cents per 1,000-tons production in your plant, according to our sales and service records.

For Research Projects, too — the GILSON Screen is the answer to moderate-scale mass separation jobs.

WHY THE GILSON SCREEN?

1. Makes test quickly and accurately
2. Two to seven separations simultaneously
3. Screen trays independently removable
4. Trays balanced to same tare weight
5. Visible separation to refusal
6. Few moving parts
7. Sturdy construction
8. Size range 4" to 200-mesh

GILSON SCREEN CO.
MALINTA, OHIO

Formation of Allis-Chalmers, Great Britain, Ltd., a wholly-owned subsidiary, has been announced by Allis-Chalmers Manufacturing Co., Milwaukee, Wis. The subsidiary will handle all Allis-Chalmers operations in the British Isles and in export markets served from the United Kingdom. Managing director of the new company is E. J. Mercer, general manager of the tractor division's English branch at Totton, Southampton, since 1951.

John Bakke, who has been traveling the midwestern states for the last 15 years, will cover Michigan, Indiana, and western Kentucky for the Flexible Steel Lacing Co., Chicago, Ill. He takes over the territory formerly covered by George W. Gramer, who is retiring after 32 years of service.

Dayton Rubber Co., Dayton, Ohio, has announced a realignment of the following departments.

J. D. Hershey, who has been sales promotion manager of the Mechanical Sales Division, and who has been with the company for 24 years, has been appointed director of sales promotion and advertising. He will be responsible for the administration of all sales promotion and advertising for the company.

R. L. Wetzel, who has been in charge of both advertising and public relations, will now devote full time to an expanded public relations program, as director of public relations. This involves the approaching 50th Anniversary of the company in 1955. He has been with the company since 1925.

A new churn drill tool repair service is now available to blast-hole drill users in eastern states at the Bucyrus-Erie sales and service station at Englewood, N. J.

R. D. Starr, district sales representative, heads sales and service personnel. E. S. Polyard, supervisor of drill parts, is in charge of the new facilities.

Joseph C. Betts has been named sales representative by the Carboloy Dept. of the General Electric Co., Detroit, Mich. Specializing in permanent magnets, he will contact accounts in Michigan and Ohio, with Detroit as his headquarters.

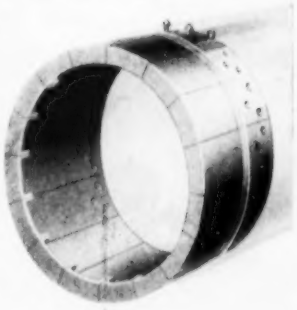
Robert M. Pozzo has been named sales representative for Carboloy at the Atlantic district headquarters, Newark, N. J.

Francis R. Flood, formerly in the product planning section, has been named a sales engineer, specializing in chrome carbides.

PYRASTEEL

SEGMENTAL KILN ENDS FOR CEMENT PLANTS
. . proven satisfactory in THOUSANDS of Installations

Avoid burnouts and shutdowns, and insure years of continuous service, by equipping your kilns, both feed and discharge ends, with PYRASTEEL Segmental Kiln Ends.
PYRASTEEL is equally effective and economical in many other high-heat applications, including clinker coolers, conveyor screws, feed pipes, and drag chains.
Over three-quarters of the annual cement output is produced in plants using either or both of our alloys, PYRASTEEL and EVANSTEEL.



PYRASTEEL KILN END, Discharge end

Unit Segments are easy to install or replace

Write for PYRASTEEL Bulletin

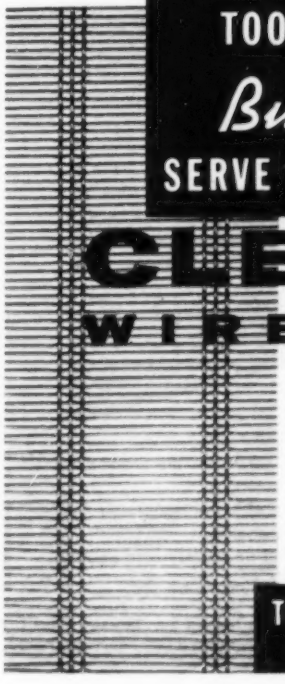
CHICAGO STEEL FOUNDRY CO.
Kedzie Avenue and 37th Street • Chicago 32, Illinois
Makers of Alloy Steel for Over 45 Years

STOP!

TOO FREQUENT SHUTDOWNS

Buy WIRE SCREENS THAT SERVE LONGER — STAY STRONGER

CLEVELAND WIRE SCREENS



. . . maintain rigid accuracy of openings.
. . . provide longer productive service.
. . . are accurately woven of tough, yet ductile abrasion-resistant steel.
. . . increase your profits.

Send us your job requirements — our specialists are at your service.

THE CLEVELAND WIRE CLOTH & MFG. CO.
3576 E. 79 STREET · CLEVELAND 5, OHIO

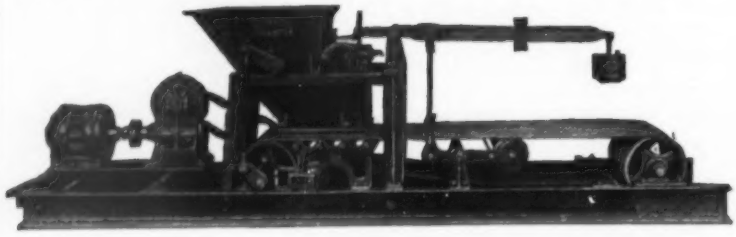
"3-D" SCHAFFER POIDOMETER

the MODERN SCALE for handling bulk material

DESIGNED to perform every scaling job *better*

DURABLE . . . built to operate continuously anywhere

DEPENDABLE . . . always provides correct data



OVER 1300 NOW SERVING INDUSTRY

DECIDE NOW to take advantage of the unique high-efficiency features offered by the SCHAFFER Poidometer.

This outstanding speed-scale weighs, blends, feeds, mixes, records, and proportions . . . and does these jobs automatically and accurately.

The unit is easy to operate, shows minimum labor and maintenance costs, and insures top-tonnage output plus increased product uniformity.

Poidometers are available with total weight recorders, and remote controls for showing and changing feed rate.

Write for CATALOG No. 5

SCHAFFER POIDOMETER CO., 2828 Smallman Ave., Pittsburgh 22, Pa.

. . . the new separable

FLEXCO HINGED
BELT FASTENERS

U. S. Patent No. 2,477,855

- For joining grader, trencher, ditcher and other earth moving conveyor belts.
- For belts ⅛" to ½" thick.
- A FLEXCO fastener that is HINGED. Has removable hinge pin.
- Troughs naturally, operates through take-up pulleys.
- Strong, durable . . . pull or tension is distributed uniformly across joint.

Order From Your Supply House. Ask for Bulletin HF 500.

FLEXIBLE STEEL LACING CO. 4623 Lexington St., Chicago 44, Ill.

Atlas Powder Co., Wilmington, Del., has announced the retirement of Daniel D. Huyett, the firm's foremost mechanical development engineer, after 34 years of service. He has numerous patents to his credit, with many others pending, on the mechanization of explosives assemblies and improvements in the mechanical handling of explosives.

He has been for many years head of mechanical process development engineering in the research and development section of the Explosives Department.

John W. Peters, formerly associated with the TVA for 13 years, has been named southeastern district manager of the Davey Compressor Co., Kent, Ohio. His headquarters will be in Wartburg, Tenn.

With the press of a button, Robert E. Huthsteiner, president of Cummins Engine Co., Inc., Columbus, Ind., started the firm's new conveyor-type production line. The 300-foot line is a part of the company's expansion program. Assembly operations on this line are conducted in a new building that is completely air-conditioned, dust-proofed and illuminated according to the highest standards.

IT COSTS NO MORE **TO USE THE BEST**

REPLACE WITH
"Indian Brand"

MANGANESE STEEL
Shovel Dippers
Dipper Teeth
Shovel Treads

Crusher Jaw Plates
Mantles—Concaves
Bowl Liners
Roll Shells

Pulverizer Hammers
Grate Bars—Breaker Plates

Ball Mill Liners
Screen Plates

The Frog, Switch & Mfg. Co. CARLISLE, PA.

ESTABLISHED 1881

how OLD is your shovel?*
if 10 years or more, this new BAY CITY will pay for itself with

1—lower maintenance
2—reduced operating costs
3—increased production
4—greater efficiency
5—fewer repairs
6—less downtime

* crane
clamshell
dragline
hoe

The economic life of a shovel will vary according to make, usage and care. Sometimes it will be 3 years — others 10 or more. But the chances are that if your shovel, crane or dragline is 10 or more years old, it will pay you to replace it with a new BAY CITY.

Here we show the heavy-duty ¾-yard shovel. It has long, wide crawlers, a cast alloy-steel base, tandem drums in ball bearings, helical gears, 517-cu.-in. gas engine, booster clutches, power dipper trip, 19-foot boom, 14-foot straddle-type dipper sticks, rock-type bucket, chain crowd — and many other time and money saving features. Shovel weight approximately 46,500 pounds.

That represents BIG VALUE — why not see your nearest BAY CITY dealer or write direct for catalog.

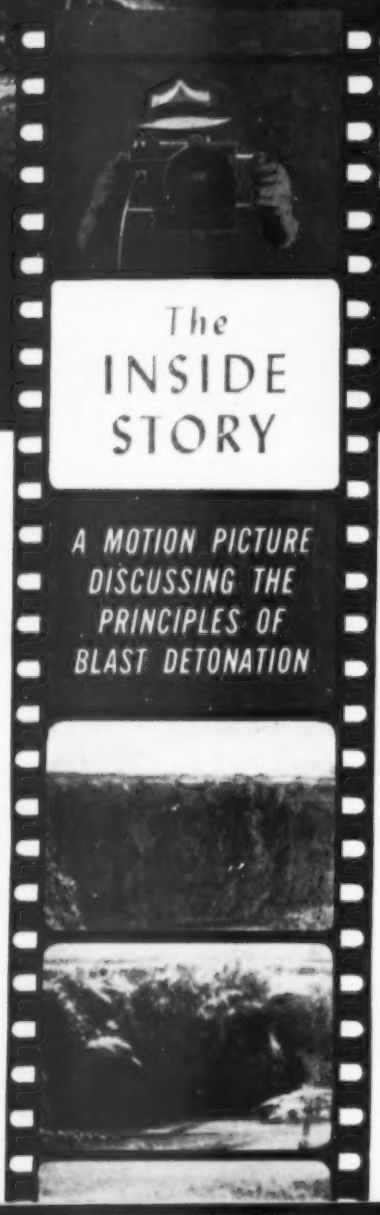
BAY CITY SHOVELS, INC., Bay City, Michigan

228

Write for any of these catalogs—crawler machines, ½ yard up; CraneMobiles and CraneWagons of 12½, 20 and 25 ton capacity—they are yours for the asking.

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS



New Atlas Movie Shows Advanced Blasting Techniques

THE NEW Atlas movie "The Inside Story," is a technical discussion of blasting methods used in quarries, strippings and construction work. It shows what happens between the firing of the cap and the blast of the explosives column. It shows how point of detonation affects rock movement . . . the most effective use of millisecond delays . . . the difference in action between progressive and alternate patterns . . . alternate velocity loading and what this new method will do toward refining millisecond delay blasting.

To get "The Inside Story" for your organization, simply write to the nearest Atlas office listed at right or to our home office. Let us know approximately when you will want it, the type of meeting you are planning and we will be glad to work out the arrangements at no cost to you.

BRANCH OFFICES

135 So. LaSalle St., Chicago 3, Ill. *Franklin 2-9530*

60 East 42nd Street, New York 17, New York *Vanderbilt 6-1730*

First National Bank Bldg. Tamaqua, Pa. *Tamaqua 1300*

No. 1 Montgomery Street San Francisco 4, California *Garfield 1-8640*

Joplin National Bank Building Joplin, Missouri *Joplin 924*

Hamilton National Bank Building Knoxville 3, Tennessee *Knoxville 2-2147*

Smithfield and Oliver Streets Oliver Bldg., Pittsburgh 22, Penna. *Atlantic 1-2684*

1320 Joseph Vance Building Seattle 1, Wash. *Main 5110*

ATLAS

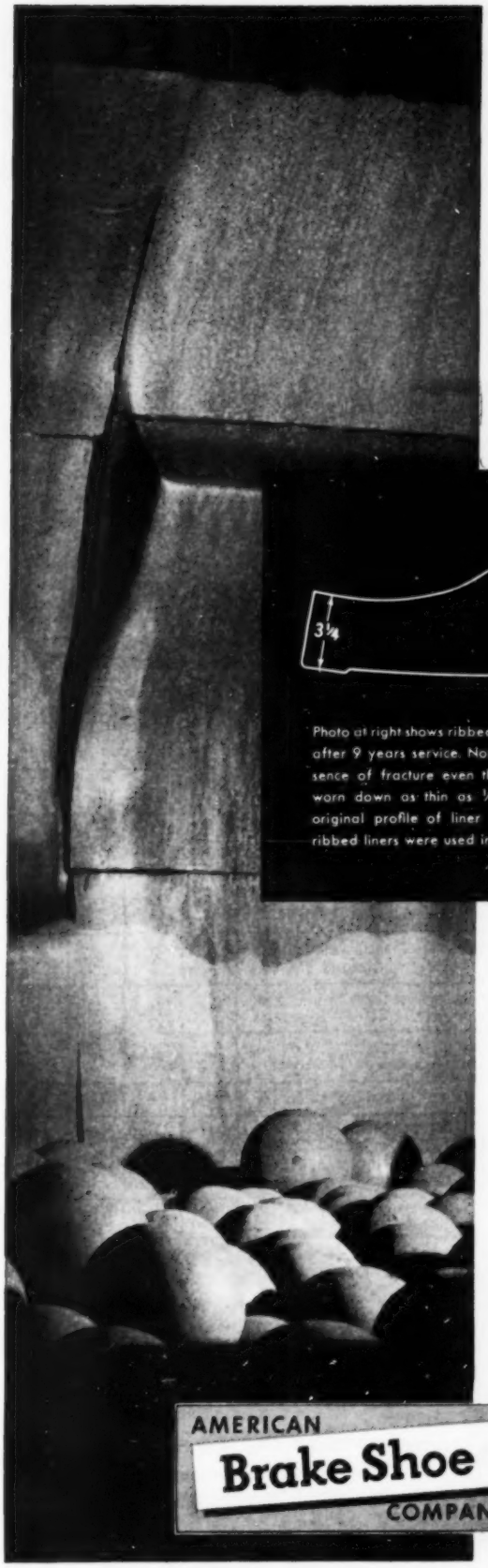
ATLAS EXPLOSIVES

"Everything for Blasting"

ATLAS POWDER COMPANY, WILMINGTON 99, DELAWARE

Offices in principal cities

9 years of service— 2.8 times over best previous life



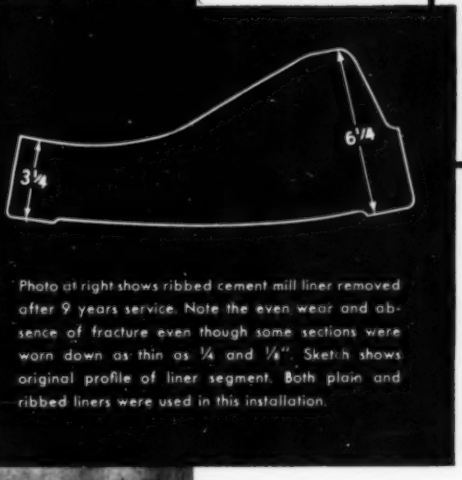
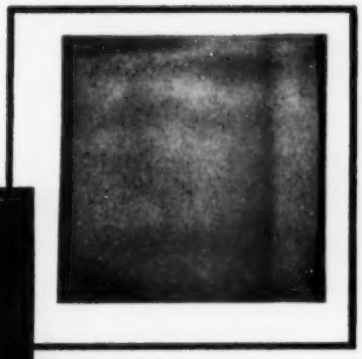


Photo at right shows ribbed cement mill liner removed after 9 years service. Note the even wear and absence of fracture even though some sections were worn down as thin as ¼ and ⅛". Sketch shows original profile of liner segment. Both plain and ribbed liners were used in this installation.



with ABK METAL LINERS

Nine years of grinding raw stone slurry—the equivalent of 2,120,000 bbls. of cement—that's the kind of service ABK Metal liners gave in a Pennsylvania cement mill. This is 2.8 times more service than the best previously experienced.

The long life which can be expected from ABK Metal liners is credited to the controlled matrix structure and hardness of this exclusive Brake Shoe nickel-chrome iron.

Inquire about the extra service you may get by specifying ABK Metal liners for your ball or tube grinding mills.

QUALITY CASTINGS IN ABK METAL MEEHANITE®

AMERICAN Brake Shoe COMPANY

BRAKE SHOE AND CASTINGS DIVISION

230 Park Avenue, New York 17, N.Y.
109 N. Wabash Avenue, Chicago 2, Illinois

2253 Houston St. Louis San Francisco Toledo

This Sanford, Maine gravel pit equipped with an Austin-Western 201 Plant is making three products simultaneously . . . ¾" to 1½" (at right), minus ¾" (at center) and minus ½" (scalping screen).

Across the country **AW** owners agree: If you **COMPARE** before buying... you'll choose an **AUSTIN-WESTERN** plant!

You know from experience that there are a lot of differences in crushing and screening plants. That's why you should compare carefully the leading makes of portable plants, looking particularly for the things which are needed for trouble-free operation and low-cost output.

A thorough comparison will convince you that Austin-Western's plant is the one for you. You will like its rugged construction, superior jaw and roll crusher and ready portability.

Here's proof that it will pay *you*, to *compare* crushing and screening plants before you buy. Study the chart in this ad and you'll see how much more you'll get with an Austin-Western crushing and screening plant. Call your A-W distributor or write us right away for further facts. Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

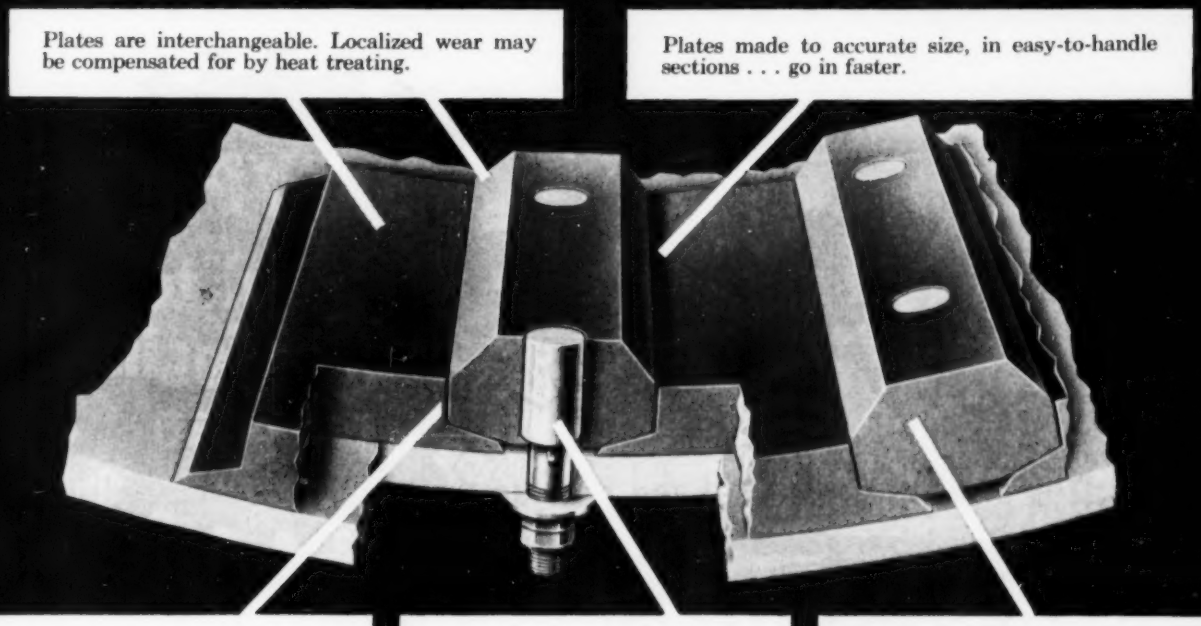
Why it will pay you to **COMPARE** before you buy				
COMPARE . . .	A-W	Make "X"	Make "Y"	Make "Z"
Welded Steel Plate crusher frame for high strength without weight of cast steel frame	Yes	No	Yes	No
Machined steel toggle plate for absolute protection instead of cast iron	Yes	No	No	No
Inclined positive-throw type vibrating screen	Yes	Yes	No	Yes
Dustproof and watertight brakes on outside of wheels	Yes	No	Yes	No
All bearings of anti-friction type	Yes	Yes	Yes	Yes
Single source for wide range of complete stationary or portable plants, crushers, matching screens, elevators, conveyors and bins	Yes	Yes	No	No
Total	100%	50%	50%	33⅓%

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

Austin-Western
CRUSHING, SCREENING and WASHING EQUIPMENT

BALDWIN BLH LIMA-HAMILTON
Construction Equipment Division

BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.


Plates are interchangeable. Localized wear may be compensated for by heat treating.
Plates made to accurate size, in easy-to-handle sections . . . go in faster.
Accurate fit of lift bars and tight joints eliminates shell wash and allied troubles.
Support for bolt head located near bottom of bar . . . bolts effective for life of lining.
Lift bars designed for correct cascade action. Height of lift varied to suit conditions.

A money-saver in any type mill . . .

USS LORAIN ROLLED PLATE LININGS

● No matter what type of grinding mill you operate, it will pay you to take a look at these cost-cutting advantages of USS Lorain Rolled Plate Linings:

You save on installation time and labor. Lorain Liner Plates can be installed quickly, easily . . . they are made to accurate size and in easily-handled sections.

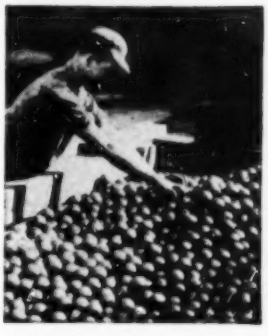
You save valuable grinding space. The great strength and abrasion-resisting qualities of the rolled steel from which Lorain Plate Linings are made, safely permit the use of reduced thickness. This means an increased usable diameter, increased output for your mill.

You save "down-time" for repairs. Costly mill repairs are reduced with Lorain Plate Linings because the tight fit between ends of plates and between plates and lift bars eliminates shell wash and associated troubles.

You save on replacement materials. USS Lorain Rolled Plate Linings last longer. And severe localized wear at feed or discharge ends can be compensated for simply by reversing the worn plates at opposite ends. You get full-life use from your Lorain Plate Linings.

There are USS Lorain Rolled Plate Linings to fit any type of mill —for wet or dry grinding. They are available through leading mill manufacturers whose names will be furnished upon request.

USS Grinding Balls offer dependable, economical grinding action



Production of USS Grinding Balls is carefully controlled to assure uniformity, surface hardness and maximum hardness penetration. They are available in diameters from ¾" to 5". Mail the coupon below for our free booklet on USS Grinding Balls.

United States Steel Corporation
Room 4312, 525 William Penn Place
Pittsburgh 30, Pa.

Without obligation on my part, please send me your FREE booklet on USS Grinding Balls.

Name .....

Company .....

Address .....

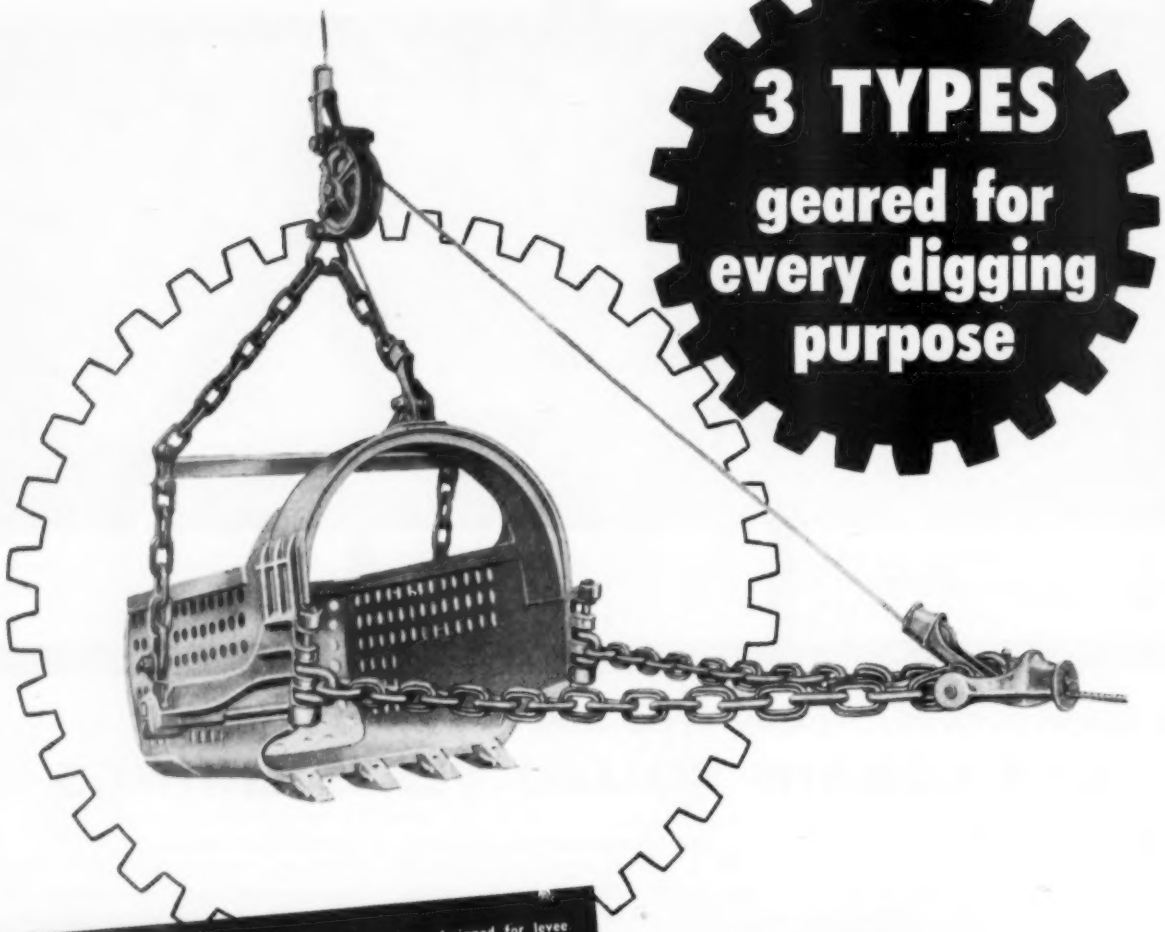
City ..... State .....

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS LORAIN ROLLED PLATE LININGS AND USS GRINDING BALLS

4-814

UNITED STATES STEEL



3 TYPES geared for every digging purpose

TYPE "LS" A lighter weight bucket designed for levee and drainage work.

TYPE "TS" A medium weight bucket classified as a general purpose bucket.

TYPE "HS" A heavy-duty bucket for moving shale or any hard formation.

HENDRIX DRAGLINE BUCKETS

3/8 to 40 Cubic Yards

Hendrix Lightweight Dragline Buckets

A TYPE AND SIZE FOR EVERY DIGGING PURPOSE

Hendrix Buckets available without perforations on special order.

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

Why you get lower cost per ton of production with

SHEFFIELD MOLY-COP

COPPER • MOLYBDENUM • ALLOY GRINDING BALLS

Mining and milling operations the world over record important net savings when the change is made to Sheffield Moly-Cop Grinding Balls.

You get this economy and better quality production because Sheffield Moly-Cop Grinding Balls are unusually tough, have greater resistance to abrasion, and retain their spherical shape longer. The reason: Sheffield's exclusive alloy and automatically controlled manufacturing methods produce a ball of finer, denser, more uniform structure. The result: fewer chargings, less "down time", high production rate.

Your nearest Sheffield representative will show you how Sheffied Moly-Cop Grinding Balls will save costs in your operation. Get in touch with him now.

Export Representatives: ARMCO INTERNATIONAL CORP., MIDDLETOWN, OHIO

SHEFFIELD STEEL CORPORATION
HOUSTON KANSAS CITY TULSA
SUBSIDIARY OF ARMCO STEEL CORPORATION

JUST CRY BABIES

when they meet their match

Abrasion, Vibration and Fatigue don't like the treatment they get when they buck up against Super-Tempered Precision Space Screens.

These durable screens effectively resist the most destructive efforts of this troublesome trio. They save you money in less downtime . . . give you longer, more dependable service. That's because they're made of hard and tough super-tempered steel, precision crimped and woven on powerful hydraulic looms.

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WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo
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PRECISION SPACE SCREENS
PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION
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2010

American Explosives and Accessories Clear the Way for America's Super-Highways!

Here's the Breakdown!

Highway	No. of Contractors	Time	Types of Rock	American Explosives Used
Pennsylvania Turnpike Irwin to Carlisle	5	1939	hard limestone, shale, limestone, trap rock, sand rock	40%, 60% ammonia and gelatin dynamites
Philadelphia Extension Turnpike	5	1949-50	"	"
Western Pennsylvania Extension Irwin to Ohio Line	3	1951	Same, except no trap rock	"
West Virginia Turnpike Charleston to Princeton	4	1953-54	shale and sandstone, hard, medium, soft	40% ammonia and gel, plus semi-gels
New York Thruway Buffalo to New York City	6	1953-54	hard to soft limestone, gneiss rock, trap rock, hard shale	40, 60, 75% standard gel and semi-gels
Ohio Turnpike Eastern border to Indiana Line	1	1953-54	shale and limestone	40% standard gel

Express highways like the famous Pennsylvania Turnpike and the New York Thruway are revolutionizing motor transportation and highway construction methods.

Today, construction engineers and contractors have to think in terms of state-wide roads, over every type of terrain – presenting a wide variety of construction problems. They have to make sure that the equipment they use – the tools, machinery and explosives – will do the job wherever it happens to be.

Leading contractors on major expressways, and quarry operators along the route who supply stone for the right of way, rely on American Explosives for safe, economical handling, good breakage, and dependable results with every shot.

Capable Field Engineers Are Available At Your Call

HIGH EXPLOSIVES • PERMISSIBLES • BLASTING POWDER • BLASTING ACCESSORIES

AMERICAN Cyanamid COMPANY

EXPLOSIVES DEPARTMENT

30 Rockefeller Plaza, New York 20, N. Y.

Sales Offices: Pittsburgh, Pa., Bluefield, W. Va., Scranton, Pa., Chicago, Ill., Pottsville, Pa., Maynard, Mass.

for

★ maximum efficiency
★ lowest maintenance cost
★ longest service life

in

CLEANING SAND

and similar materials

Specify

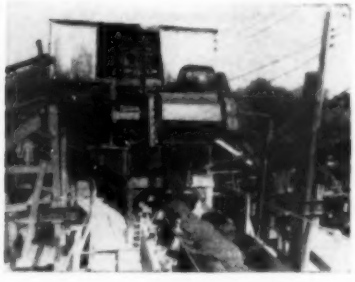
McLANAHAN SCREW WASHERS

McLanahan Screw Washers—thoroughly proven in service—provide the ultimate in equipment for the efficient, low cost removal of foreign material and water from sand or coarse materials.

These washers contain many outstanding features, including: antifriction bearings which are easily removed without disassembly—extra large settling area—enclosed reduction drive—flights are cast chilled alloy iron for extreme hardness and resistance to wear.

Washers are available in Single and Double Screw models illustrated—in 20′ and 25′ lengths dependent on moisture content and capacity desired. Investigate today!

Typical installations



McLANAHAN & STONE CORPORATION
Pit, Mine and Quarry Equipment Headquarters Since 1835
Hollidaysburg, Pennsylvania

Write for Bulletin SW-953
This bulletin contains data and drawings on Single and Double Screw Washers. Write for your copy today!

Dependable Products: Single and Double Roll—and Jaw Crushers, Crushing Plants, Reciprocating Plate and Apron Feeders, Roll Grizzlies, Conveyors, Elevators, Loaders, Screeners, Steel Log Washers, Screw Washers, Sand Dregs, Hoists, Jigs, Dry Pans, Dryers, Scrap Sandlers, Pulleys, Gears, Bearings, Sprockets, Sleeves, Rollers, Bin Gates, Elevator Buckets, Gratings, Car Wheels, Ferrous and Bronze Castings.

More than 200 GM Diesel Engines

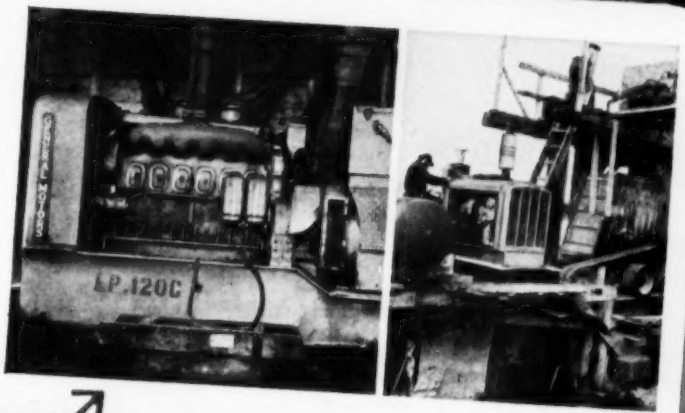
ON LABRADOR IRON ORE PROJECT

GM DIESEL
CASE HISTORY No. 53-222

USER: Iron Ore Company of Canada

INSTALLATION: GM 6-71 powering conveyors and washer. Another GM 6-71 drives Holland hammer mill. Crusher supplies material for Menihek Dam project, 300 miles above base camp. Two of more than 200 GM Diesels used by I.O.C. and contractors in a wide variety of equipment.

PERFORMANCE: Crusher produces up to 500 yards per day, depending upon truck availability. Crushing 12" stone to 1" to 5" sizes; fines used as sand. GM Diesel used previously for lighting at base camp had run 18,000 hours without any downtime.



—and this one worked 18,000 hours without overhaul

Pushing a railroad 360 miles through wilderness to tap rich iron deposits on the remote Quebec-Labrador border, the Iron Ore Company of Canada and contractors building the road, dams and terminal facilities depend upon General Motors 2-cycle Diesel engines for more different kinds of work than any other engine.

Among the many good reasons is GM Diesel's dependable 2-cycle operation which means more power from a smaller, more compact engine. Smoother, quicker-acting faster-starting power that corresponds to increased loads and gets work done faster at lower cost.

Also, in isolated operations like this—where fuel and all supplies had to be flown in—lighter weight and interchangeability of GM Diesel parts insure higher availability and cut costs. Most moving parts are identical for all Series 71 engines—2 to 24 cylinders—so parts cost less and inventory requirements are lower. Users need never worry about replacements or service, for GM Diesel engines and parts are sold through a world-wide organization of distributors and dealers. The one near you will welcome your inquiry on any power problem.

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN
Single Engines . . . 16 to 275 H.P. Multiple Units . . . Up to 840 H.P.

It pays to STANDARDIZE on

. . . available in more than 750 models of equipment built by over 150 manufacturers

GM
GENERAL MOTORS
DIESEL POWER

TRACTOR SHOVELS CUT HANDLING TIME AND LABOR IN IOWA ROCK QUARRY

Dig, haul and load to crusher . . . average two tons a minute in a nine-hour day

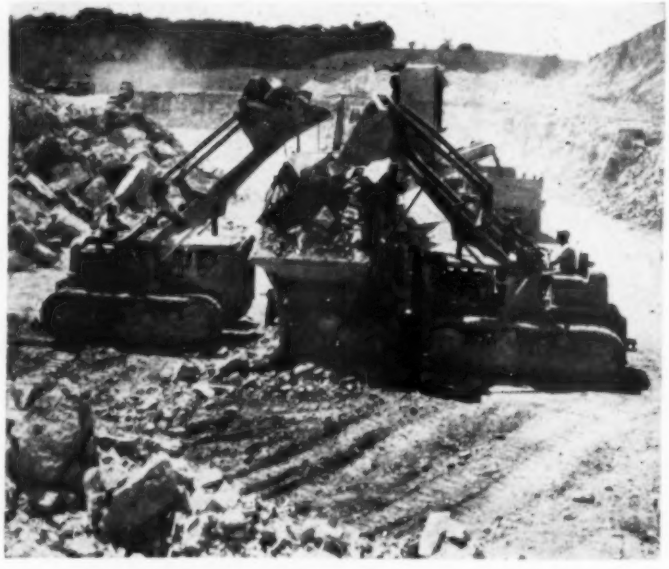
The 72-hp. HD-9G has ample power to dig into tough rock piles and come out with a big payload every time. Wide bucket permits quick loading and safe handling of large rock. These dependable tractors are on the job nine hours a day, six days a week.

Production costs are being cut in a large rock quarry in Iowa, by two Allis-Chalmers HD-9G Tractor Shovels, and their use is bringing additional efficiency to the entire operation.

These two tractors, equipped with standard two-yard buckets, load rock directly from quarry face to rock crusher, eliminating the need of continually moving crusher. What's more, the speed of these two units enables the crusher to load out 135 eight-ton trucks a day.

The excellent performance of the two Allis-Chalmers Tractor Shovels has attracted the attention of local contractors and county officials. Many have stopped by especially to see these two machines at work.

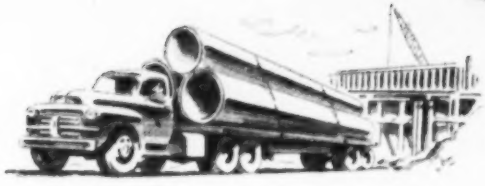
Let your Allis-Chalmers dealer show *you* the HD-9G at work. See how it can bring new efficiency to your operation.



With the Tractor Shovel method, rock is handled only once from quarry to crusher. Crusher is able to load out 135 eight-ton trucks a day when fed by these fast-working Allis-Chalmers tractors.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Eaton 2-Speed Axles save engines, keep trucks on the job, reduce operating and maintenance costs, make trucks last longer



More than two million Eaton Axles in trucks today! For complete information, see your truck dealer.

Eaton 2-Speed Axles double the conventional number of gear ratios, enabling drivers to select a ratio to deliver pulling power or speed—the ratio best suited to road and load conditions. Engines operate in their most efficient and economical speed range, reducing stress and wear on engine and power transmitting parts, holding operating and maintenance costs to a minimum, adding thousands of miles to engine and over-all vehicle life. Eaton 2-Speed Axle trucks haul more, faster, longer, at lower cost—are worth more when traded in.

EATON
2-Speed Truck
AXLES

Axle Division
EATON MANUFACTURING COMPANY
CLEVELAND, OHIO

PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

Keeps the Hopper Humming

INTERNATIONAL TD-24 CRAWLER TRACTOR AND SCRAPER hauls raw materials easily, speedily from the pit to the conveyor at the E. W. Coons Company plant in Saginaw, Minnesota.

Fast hauling of raw material keeps production high at Minnesota crushing plant

Day in and day out, even in the roughest weather, the E. W. Coons Company crushing plant at Saginaw, Minnesota, produces over 1,000 cubic yards of sized rock for use in local construction and for railroad ballast.

There's a big reason behind this enviable year round production rate. It's the big INTERNATIONAL TD-24 crawler tractor and scraper used by the Coons Company for pit work.

"With the INTERNATIONAL *TD-24 and scraper hustlin' those heaping loads to the conveyor we have no trouble keeping the hopper full all the time . . . even when the raw rock has to be hauled from the rear of the pit.*

"Those big loads and speed add up to more production for us," says Superintendent Thomas S. Brunner.

Find out how INTERNATIONAL Power . . . "Power That Pays" . . . can pay off for you. Check with your International Industrial Power Distributor today. He'll gladly arrange a demonstration of "the power that comes in the big red package!"

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

INTERNATIONAL

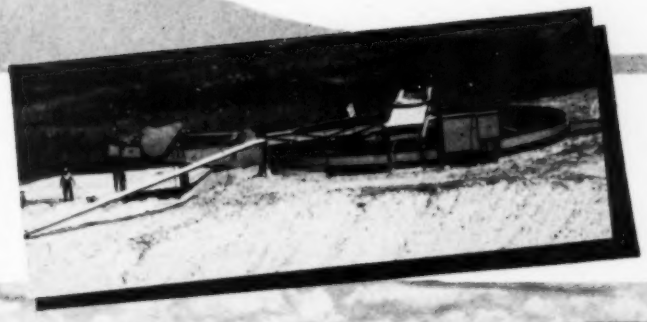
INTERNATIONAL HARVESTER

* ***Phased* Equipment**—Machines designed and built to handle each major phase of earthmoving most efficiently and economically.

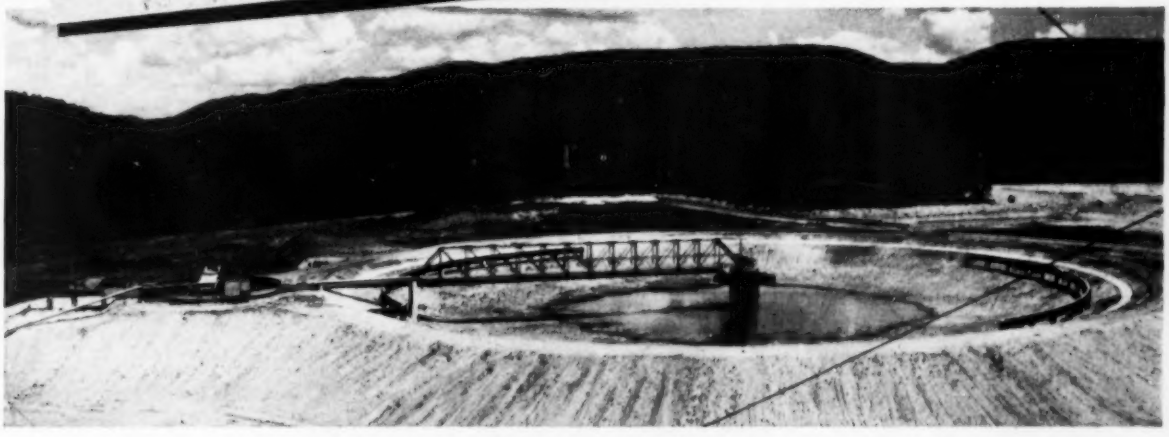
For every move in Earthmoving

See INTERNATIONAL'S "Job-Phased*" equipment

How PENNSYLVANIA GLASS SAND teams up DORR equipment for maximum economy...



Left—Closeup of Bowl Desiltor, with 50′ dia. bowl.
Below—Overall view of installation with 250′ dia. Dorr Clarifier at right.



By combining two modifications of basic Dorr machines, Pennsylvania Glass Sand Corporation effects a high degree of waste treatment . . . at an amazingly low installed and operating cost. Here's how it's done:

STEP NO. 1 — Waste water from the silica plant goes first to a Dorrco Bowl Desiltor, a low cost modification of the Dorr Bowl Classifier. The Desiltor removes most of the −100 +325 mesh silica in a clean, drained condition.

STEP NO. 2 — Desiltor overflow then flows by gravity to a 250′ dia. Dorr Clarifier equipped with a flocculating feed-well and installed in an earthen basin. Clarifier underflow, containing the −325 mesh material, is impounded, and the clarified overflow is discharged into the Juniata River.

This economical installation at Pennsylvania Glass Sand's Hatfield Works is a good example of Dorr's ability to provide the equipment to fit the job. If you would like more information on the Bowl Desiltor and Dorr Clarifier-earthen basin team, just drop a note to The Dorr Company, Stamford, Conn., or in Canada, The Dorr Company, 26 St. Clair Ave. East, Toronto 5.

DORRCO

Better tools TODAY to meet tomorrow's demand

DORR

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

FIFTY YEARS 1904-1954

THE DORR COMPANY • ENGINEERS • STAMFORD, CONN.
Offices, Associated Companies or Representatives in principal cities of the world.

Wire Rope at Work—This is part of the surface installation at The New Jersey Zinc Co.'s mine at Friedensville, Pa. From the hoist house (one of the most modern in the country) wire ropes for the materials hoist and counterweight are run to giant bicycle sheaves, from which they rise to the headframe. There they begin their vertical descent to the shaft, which is approximately 1250 ft in depth.

Rock and earth from the underground drifts are brought to the surface in the hoist, so the loads are very heavy. To provide a hoisting rope that would combine great strength with high flexibility, the management selected 1975 ft of 1⅜-in. Bethlehem Purple Strand with the Form-Set (preformed) construction. The counterweight rope, also Purple Strand, is a 1⅜-in. 18 x 7 nonrotating line. These two heavy-duty ropes have more than earned their keep in the gruelling day-in, day-out service for which they were installed.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

MINING • CONSTRUCTION • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING

"Sinclair TENOL has permitted remarkable performance!"

says Wayne Pressnell, President, Columbia Rock Products Corp., Columbia, Tenn.

Producing commercial stone and agricultural limestone in this 50' quarry is rough on the equipment of the Columbia Rock Products Corporation . . . *yet mechanical failures are rare.*

Mr. Pressnell writes, "We operate 11 diesel units including Euclid Trucks, Motor Patrol Graders, Bulldozers, Draglines and Shovels – all lubricated with Sinclair TENOL®. One Lorain Shovel, powered by Caterpillar engine has been credited with 5000 operating hours over a 2-year period without any mechanical failure. Another of our shovels has chalked up 20,000 operating hours over a 10-year period – *10,000 hours without overhaul.* Sinclair TENOL has certainly helped our equipment give us a remarkable performance record."

Mr. Pressnell's choice of Sinclair TENOL has helped slice off a large part from the maintenance costs of his company. Why not let TENOL do the same for you. Phone your local Sinclair Representative or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N.Y.

SINCLAIR TENOL

prolongs engine life

ROCK-RATED!

P&H MAGNETORQUE* gives highway work a new PUSH!

Friction-free swing speeds up digging cycle— gives you 20% more output.

P&H 1055 — 3½ yds.
P&H 955-A — 2½ yds.

BIGGER PRODUCTION FOR THE BIG ROAD JOBS AHEAD!

Make no mistake — outdated designs can't compete with these modern P&H machines! This is the time to convince yourself!

Watch a Magnetorque-equipped machine go through its paces. Note the smoother, faster swing! Compare the yardage! And remember, there's no time out for pampering swing friction clutches. P&H Magnetorque does it electro-magnetically. No friction — no wear. No bothersome adjustments. Magnetorque lasts the life of your machine.

Strength? These machines are built as only P&H can build them — all welded throughout of tough, rolled alloy steels.

They're ROCK RATED . . . ready for the repeated shock loads that wear down less rugged machines.

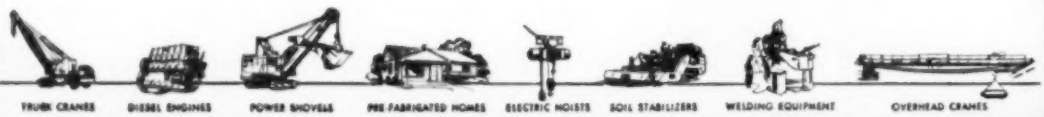
Ask us to tell you where you can see the nearest P&H 955-A or 1055 at work.

P&H POWER SHOVELS AND CRANES

HARNISCHFEGER CORPORATION MILWAUKEE 46, WISCONSIN

*T.M. of Harnischfeger Corporation for electro-magnetic type coupling.

the P&H Line



TRUCK CRANES · DIESEL ENGINES · POWER SHOVELS · PRE-FABRICATED HOMES · ELECTRIC HOISTS · SOIL STABILIZERS · WELDING EQUIPMENT · OVERHEAD CRANES

"We're Proud

OF OUR ERIE STRAYER BULK PLANT"

SAYS SUP'T. STONEBRAKER OF A. J. GLASER COMPANY, MUNCIE, INDIANA

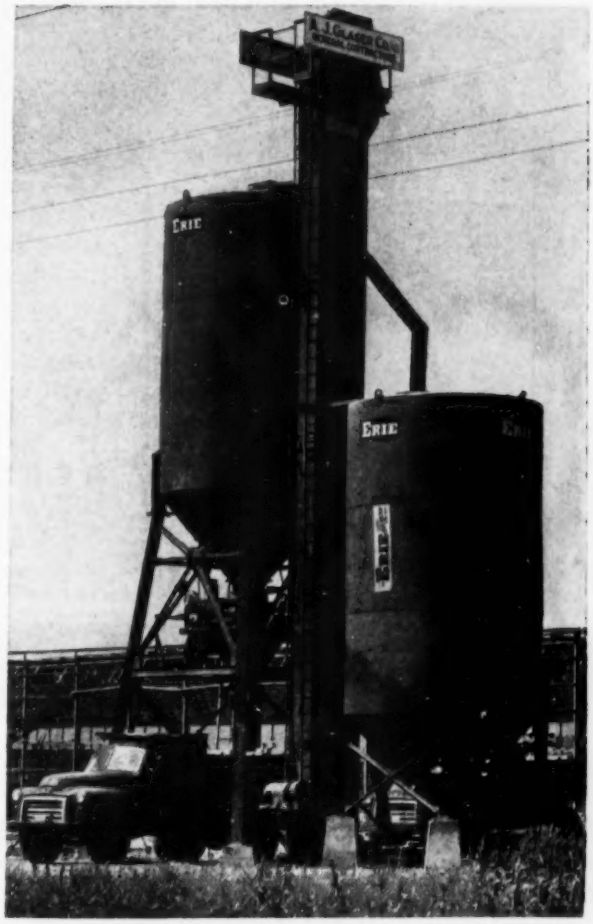
"And why shouldn't we be! We knock it down, move it and set it up all in 3 days. Makes a perfect setup for truck mixers, too!"

●

Continues Mr. J. H. Stonebraker, "We know Erie equipment. For the past 7 years we've been using their Strayer Portable Concrete Mixing Plant. Our experience with this unit prompted us to buy the Erie Strayer Bulk Cement Plant. We're more than satisfied with the installation."

Important as it is, quick knock-down and set-up aren't the only advantages our owners get out of their Erie Strayer Plants. Other features are: accurate, high output plants and fast service on repair parts.

If you're thinking about a portable batching or mixing plant, don't decide till you get the Erie Strayer story. Learn for yourself why most Erie owners repeat with Erie Strayer equipment when expanding.



Glaser's installation includes: 2 CSB silos with a total capacity of 900 bbls; a 20 cu. ft. Cemetor (type DWH) with approximate capacity of 2400 cu. ft. per hour; and, a 50-TPH Elevator. One man handles entire operation. Sold by Seastrom and Company, Indianapolis, Indiana.

Cable Address: EXIMPORT. *Write for* Booklet GS, Dept. Q54

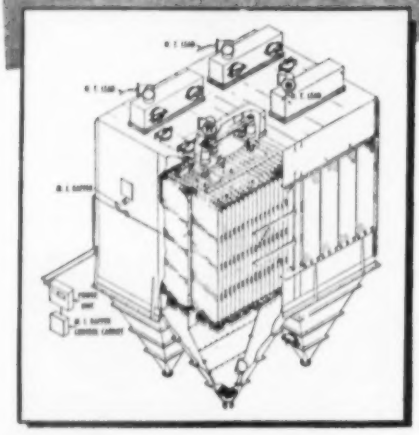
FORMERLY ERIE STEEL CONSTRUCTION COMPANY

ERIE STRAYER CO.

SAME PEOPLE • SAME PRODUCTS • JUST A NEW NAME

354 GEIST RD. ERIE, PENNSYLVANIA

NEW!
COTTRELL M-I RAPPER
ELIMINATES ALL FOUR...



1. No more rapping puffs.
2. Automatic operation—conveniently located remote control panel provides complete control plus surveillance.
3. No dampers in inlet and outlet of precipitator are necessary.
4. No sections need be taken out of service for rapping.

HERE'S HOW IT WORKS: The new Research Corporation Magnetic Impulse Rapping System uses continuous, sequential, low intensity vibrations to keep thinner average coating on collecting electrodes. This method maintains optimum electrical conditions for continuous high efficiency dust collection. Ask your Research Corporation Field Engineer for complete data on this important new development, or write to us directly.

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405 Lexington Ave., New York 17, New York
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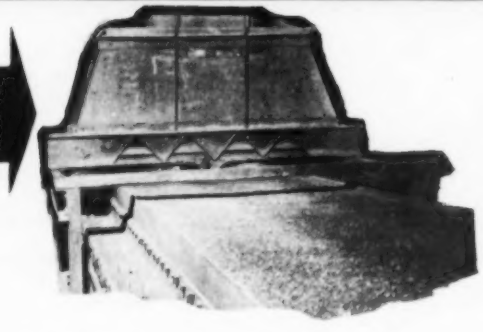
RC 141

DWIGHT-LLOYD® SINTERED LIGHTWEIGHT AGGREGATE

425 CUBIC YARDS DAILY

FROM A 50' MACHINE



A high output rate is vital when you want to sell the growing market for Lightweight Aggregate. The Dwight-Lloyd sintering machine gives you consistently high quality aggregate at a greater output rate than can be obtained by any other process—a Dwight-Lloyd plant using a standard model machine with a 50' hearth length has a nominal capacity of 425 cubic yards per day.

When facilities for greater output are required, additional sections can be added to the machine at a fraction of the original cost, up to a capacity of 1000 cubic yards per day.

Dwight-Lloyd machines can be operated continuously or intermittently without loss of efficiency, waste of material, or stand-by and restarting costs. Fuel consumption is 2/3 less than with any other process. Operation is automatic, requiring a minimum of skilled labor.

Dwight-Lloyd, Inc., has complete facilities for designing and constructing your entire plant. We also offer the services of our modern pilot plant to test your materials.

For complete information write for Bulletin 151

DWIGHT-LLOYD, Inc.

DIVISION OF SINTERING MACHINERY CORPORATION
130 SINTER AVENUE NETCONG, NEW JERSEY

May 1954

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY

On Our Cover

The photographs on this month's cover were selected with a view to indicating the outstanding versatility and beauty of concrete products in residential construction. The homes shown are located in Phoenix, Arizona (lower view), Sarasota, Florida (upper left), and Des Moines, Iowa (upper right). The Arizona and Florida exhibits are of concrete masonry units, while the Iowa residence is a rather unusual example of cast stone construction.

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EXTRA *Quality*...EXTRA *Speed*

Six Firesafe Concrete Dormitories on Cornell's Beautiful Campus Erected with 'Incor' at Average Rate of a 5-story Frame every 11 Working Days

● Last Fall, six five-story dormitories—reinforced-concrete frames for utmost firesafety, speed, economy—were erected in record time on Cornell University campus: Foundations started August 13 . . . 1st floor concreted September 8 . . . last roof slab poured November 18, ahead of cold weather . . . 66 working days from first foundation to last roof slab (average, 11 days per building) . . . with foundations ranging from rock to caissons.

Good job planning and dependable 'Incor' high early strength assure extra speed at less cost. Extra quality, too: You see it in the easy-placing mixes . . . in smooth exposed concrete surfaces . . . in minimum drying shrinkage . . . and in the intangible but important difference that the crew, conscious of quality on an 'Incor' job, gets the most out of the concrete.

Over 25 years' performance, on job after job, clearly shows that 'Incor' produces more dependable results, at less cost, than by experimenting with "an extra bag of ordinary cement in the mix." One contractor summed it up by saying that he sleeps sounder at night with 'Incor'* on the job. *Reg. U.S. Pat. Off.

MEN'S DORMITORIES,
CORNELL UNIVERSITY
Ithaca, N. Y.

Architects & Engineers:
CHAPMAN, EVANS & DELEHANTY,
New York City

General Contractor:
C. E. YOUNGDAHL & CO., INC.,
Long Island City, N. Y.

Ready-mix 'Incor' Concrete:
RUMSEY-ITHACA COMPANY,
Ithaca, N. Y.

DRYING SHRINKAGE OF CONCRETE

Tests of 3x3x12-inch concrete beams, cured in air of 50% relative humidity at 70°F. after 1 day in mold. Results are average of 3 specimens for each cement from batches mixed on different days.

Mix bags/cu. yd.	Water gal./bag	Drying Shrinkage—inches per 100 ft. 3 d	7 d	28 d	3 mo.	1 yr.
Average 10 Lone Star Type I Cements (6-inch slump)						
3½	10.59	.156	.264	.516	.612	.648
4¼	8.27	.156	.24	.516	.624	.684
5	6.78	.18	.252	.528	.66	.696
6	5.62	.168	.228	.48	.636	.684
7½	4.65	.156	.228	.468	.636	.696
Average 10 'Incor' Type III Cements (6-inch slump)						
3½	10.48	.156	.252	.516	.648	.672
4¼	8.29	.156	.216	.48	.636	.672
5	6.9	.144	.216	.468	.636	.672
6	5.83	.156	.228	.444	.636	.684
7½	4.93	.156	.24	.48	.648	.708

Shrinkage of 'Incor' concrete is the same or less than concrete with Type I cements, through a wide range of equivalent mixes. 'Incor' develops greater strengths at early and later ages and is therefore better able to withstand shrinkage stresses. On the job, proper curing, starting at the earliest possible time, reduces shrinkage effects with all types of cement.

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA. • BIRMINGHAM
BOSTON • CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS
KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK
PHILADELPHIA • RICHMOND • ST. LOUIS • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 136,000,000 SACKS ANNUAL CAPACITY

The CONCRETE MANUFACTURER

May 1954

The Seller Must Sell

A GOOD DEAL of sheer nonsense is being spoken and written these days about the return to a buyer's market. We've been guilty of a certain amount of it ourselves, and while the subject is still timely, we would like to disavow even the slightest belief in the concept that there are times when the seller has no pressing obligation to sell.

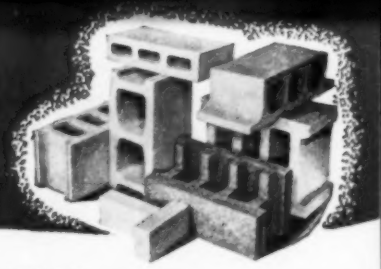
There *are* times, to be sure, when the buyer's sales resistance is down, as it was for some years following the subsidence of World War II, and there can be little doubt that this long period of easy selling has been responsible for the widely accepted notion that we have been operating in a seller's market. Companies that found it convenient to adopt this point of view reduced or eliminated their sales forces and became, so far as true merchandising was concerned, mere order takers. In many cases the only service they bothered to give their customers was to answer the telephone now and then.

A good many businessmen are now bemoaning the fact that the buyer is back in the driver's seat, and that intensive selling is again required to market the productive potential created during the years when the seller was top dog. In our judgment the buyer was never for even a moment out of the driver's seat, although there have been periods when his navigation could easily have justified a charge of drunken driving. In any case, he has sobered up now, and there is every indication that he is in a mood to be a little rough on the "let's just answer the telephone" boys.

In our opinion there never was, and there never will be, any kind of market except a buyer's market. If the seller wishes to stay around and prosper for any length of time, he must recognize a constant obligation to sell his company, using such persuasive tools as courtesy, service, dependability, and a genuine desire to earn and hold the customer's good will. It makes no better sense to suppose that you can be a seller and not sell, than to believe that you can be a worker and not work.

William M. Avery

Besser Automatic Vibrapac



Gives You MORE!

The growth of the concrete block industry coincides with the growth of the Besser Manufacturing Company. 50 years ago, Besser made the first concrete block machine. Since then, the company has devoted its constant and untiring efforts to producing better block machines, pioneering new types and improving production methods. Today — the Automatic Vibrapac is the result of that half-century of pioneering and developing. The machine gives you MORE . . . more power, more smoothness, more ruggedness, and, what every block plant operator is primarily interested in, more block production. No doubt about it — the Automatic Vibrapac is the world's leading concrete block machine — a PROFIT MAKER for block plants everywhere.

BESSER MANUFACTURING CO. • Box 131 • Alpena, Mich., U.S.A.

MORE power

The Automatic Vibrapac provides unidirectional vibration from two 10 horsepower, high starting torque vibrating motors — DOUBLE the horsepower of any other block machine.

MORE production

The famous Besser cam and roller principle assures maximum block production. The slow revolving cam, with a roller riding on its surface, delivers power with pin point precision and with steady, uninterrupted regularity.

MORE smoothness

The Vibrapac is equipped with gravity actuated block moving weights which assure much smoother delivery of the finished block at high speeds.

MORE ruggedness

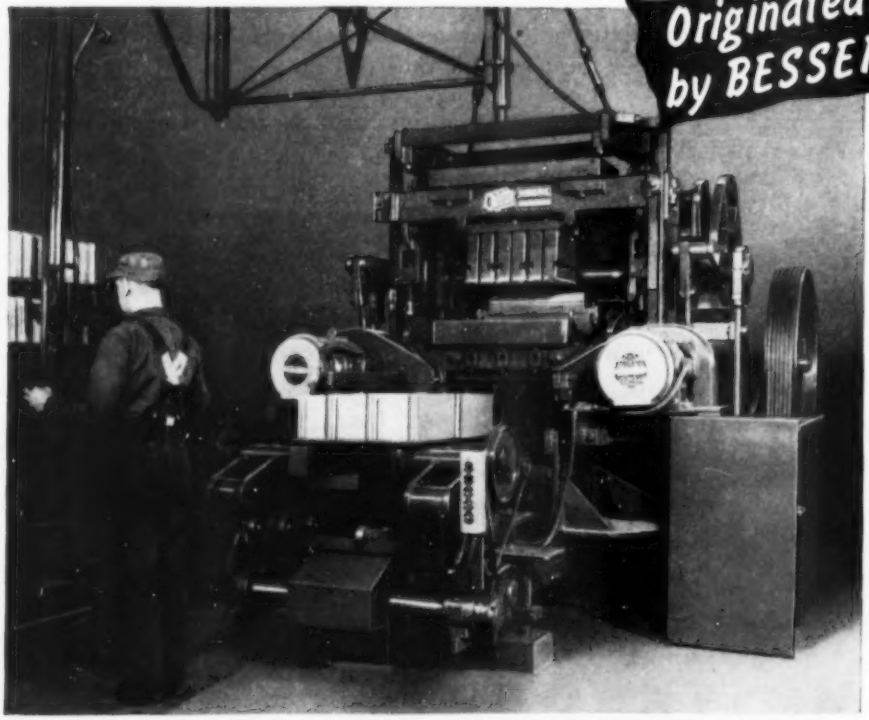
The machine frame of the all-steel electrically welded Vibrapac is made of 1½" thick steel—almost unbelievable, but it's a fact. That's why the Vibrapac is able to produce block, day-in and day-out, without interruption — for YEARS.

Watch VIBRAPACS Work

Step into any Vibrapac block plant and see high quality block made, *automatically*. Notice there are no lost motions and no time is wasted. Pallets and mixed materials are fed automatically. As block are completed, they are quickly transferred to the racks. No manual lifting. Off-bearer merely guides the power hoist.

●

Vibrapacs are versatile. They make ALL types and sizes of high-quality masonry units on ONE set of Plain Pallets. Vibrapac Block are specified by progressive architects — used by leading contractors—produced and sold by leading concrete products plants.



Your profits depend largely on the uninterrupted production of high quality masonry units. The Automatic Vibrapac enables you to reach this goal. It produces block of exact height and uniform density on a continuous production line. Three 8"x8"x16" modular units (or equivalent in other sizes) are made at a time on one Plain Pallet. No machine operator is required.

BESSER
50th Anniversary
1904-1954

A Half Century of Concrete Masonry Progress!

NEWS OF THE CONCRETE INDUSTRIES

Wisconsin R.M.C. Men See Good Future in '54 More Competitive Market

Optimism for the future of the ready-mixed concrete industry was the atmosphere prevailing at the fourth annual convention of the Wisconsin Ready Mix Concrete Association at Milwaukee's Plankinton Hotel on March 22 and 23.

"We expect a good year in home building here, as well as plenty of school, hospital, and industrial work," said George H. Tews, association president and manager of the West Allis branch of the Tews Lime and Cement Company. He added that prices would probably hold, although sharper competition may cause slight price reductions on bigger jobs. Mr. Tews anticipates no decline in production. Ray F. Palmer, manager of the Verona Redi-Mix Company and vice-president of the association, predicted that booming institutional construction in the Madison area would maintain the 1953 high concrete sales level there.

Another speaker, Harold C. Mulvey, assistant manager of the Twin City Transit Mix Concrete Company at Neenah, who is the association's secretary-treasurer, stressed the demands of ready-mix customers for more and better services as an indication of an increasingly competitive situation in this field. There was general agreement among association spokesmen that the industry is in a period of readjustment, but that this is a healthy trend. About 200 producers attended the sessions.

Concrete Masonry Taught At California Boys School

At Hondo, Calif., classes in concrete masonry construction have been established in the Hondo Boys School through the co-operation of the Concrete Masonry Manufacturers Association and the Fence & Masonry Contractors Association.

Under the instruction of D. H. Hoover, Adobe Engineers, students have progressed to the point of constructing permanent concrete masonry installations at the school. A recent project was the erection of a retaining wall around the office, enclosing a planting area. Adobe 6- by 4- by 16-in. concrete units were used. Cost for materials and tools are borne jointly by C.M.M.A. and the masonry contractors group.

Coming Events

June 13-18, 1954—Chicago. Annual meeting, American Society for Testing Materials. Eleventh exhibit of testing and scientific apparatus and laboratory supplies and ninth technical photographic exhibit. Sherman and Morrison hotels.

June 20-27, 1954—*Brussels*, International congress of concrete products manufacturers.

August 24-25, 1954—Murray Bay, Quebec. Directors' meeting. National Ready Mixed Concrete Association. Manoir Richelieu.

Kelly Executive of New Firm

John P. Kelly has been named vice-president of the new firm of Plasticrete-Hartford Concrete Units Corporation formed by Plasticrete Corporation's purchase of the Hartford Concrete Units Company. The concern plans to retain all Hartford staff members.

Wilson Named President Of Montana R.M.C. Assn. At 4th Annual Meeting

Billings, Mont., was the host city for the fourth annual convention of the Montana Ready Mixed Concrete Association March 11, 12, and 13. Sessions were held at the Northern Hotel. Results of the annual election of officers were as follows: president, Ed Wilson, Great Falls; vice-president, Gene Fehlig, Helena; and secretary-treasurer, Adolph Bromgard, Billings. The following were named directors: Charles Hall, Missoula; Henry Lohof, Billings; and C. B. Nicely, Anaconda.

At a luncheon meeting Walter Kuetzing, Billings architect, was the featured speaker. A technical discussion on problems in screening sand and gravel was led by L. H. Richter, assistant materials engineer for the Montana Highway Department. In his talk on the history, development, and use of precast and prestressed concrete, R. E. Tobin, consulting engineer, Spokane, Wash., mentioned a structure of that type built as early as 1905. Other topics covered at the convention included labor-management relations, group insurance plans, and concrete preparation.

● The men in this picture are the newly-elected officers and trustees of the Ohio Concrete Block Association, Inc., chosen at the group's first annual convention in February. Left to right, front: John F. Royer, Columbus, secretary; O. H. Seeger, Columbus, second vice-president; Sam C. Davis, Dayton, first vice-president; William A. Rodgers, Chillicothe, president; and R. E. Francis, Cincinnati, immediate past-president. Rear [all trustees]: J. Paul Batterson, Columbus; H. J. Schmitz, Mansfield; G. H. Brunk, Springfield; Robert B. Hindman, Marietta; and E. E. Osborn, Wilmington. Those not in picture are T. L. Goudvis, Elyria, treasurer; George B. Eichenlaub, Columbus; R. Neil Christy, Marietta; and Robert W. Geist, Piqua.

Help! Help!

A get-together department for those who have problems or queries concerning the concrete industries and those who (we hope) have the answers. Please address all communications to The Concrete Manufacturer, 431 South Dearborn Street, Chicago 5, Ill.

The mail has bulged just lately with requests for out-of-the-ordinary equipment and supplies, and we're hopeful that the readers of this department will again come to the rescue as they have so often in the past.

Wire Tier A Canadian reader wants to know if any one manufactures a tool which speeds up the job of tying reinforcing bars with wire at intersection points. He's using ordinary pliers now and finds it pretty slow going. Somewhere in our travels we've seen a gadget for this purpose that operates on the same principle as a push drill. The tool has an open hook on the business end which engages loops on the ends of the tie wires. When the device is pulled, the hook rotates and the wires are twisted together.

Carboard Molds A Pennsylvania block maker is looking for a source of carboard molds to be used for pouring circular columns. We know that molds of this type are manufactured, but we can't seem to run down the names of the suppliers.

Wells and Cesspools A concern in Virginia wants to purchase forms for making 24-, 30-, and 35-in. concrete well casing, and another firm located in New Jersey is looking for steel well-rings and perforated cesspool ring forms.

Bench and Tub Molds Indicative, perhaps, of the block producer's renewed interest in product diversification, many of the information requests we've received lately are concerned with molds for casting various items. A South Dakota block producer is looking for molds with which to cast bus stop benches, a Duluth concern is searching for equipment with which to make concrete laundry tubs, while a South Carolina reader is in the market for steel molds for casting obelisk-type street signs.

Lightweight Aggregate We receive a steady flow of letters asking for sources of various types of lightweight aggregate. We can generally handle these by sending out a copy of the map of the lightweight aggregate industry which we published last year; but every now and then somebody asks about a specific material that is new to us. Most recently we've had an inquiry from a construction firm in Michigan concerning a material called "Garylite". If the name means anything, it ought to be an expanded slag product from the steel mill district in Gary, Ind., but we have no information on it.

More About Slide Rules We're still getting information about concrete slide rules and volume computers. The following firm names should be added to the list we published in our March issue: Louis M. Gerson Co., 99 Deering Road, Mattapan 26, Mass.; and Slide Rule & Scale Engineering Co., Mt. Olive, Ill.

In our January issue we advised a reader who was seeking a "give-away volume computer" to get in touch with Lockhart Rule Co. in St. Louis. Last we heard more than a hundred readers had sent in requests for "free" computers. Our apologies to Lockhart and to the readers whom we inadvertently led astray. The rules are give-away items in the promotional sense, and Lockhart manufacturers and sells them for this purpose.

Big Economy Effected With Haydite Ready-Mix In Portland Hospital

Ready-mixed concrete made with Haydite aggregate furnished by Smith Concrete Products and delivered by the Ross Island Sand and Gravel Company is reportedly saving a total of 3,186,000 lb. in the construction of the 14-story General Hospital at Portland, Oreg. Use of lightweight expanded-shale concrete in the top 11 floors of the structure will cut costs, permit greater functional efficiency, and lend top fire safety characteristics.

Semi-continuous high-tensile bolted framing, the Cofar system of floor construction (corrugated steel panels covered with a lightweight monolithic concrete slab), and a special fireproofing method are outstanding features of the project. (Interior columns were fireproofed with 1 in. of lightweight plaster and exterior columns with concrete, poured simultaneously with the exterior spandrel walls. Primary floor beams and girders were fireproofed in the center bay with expanded-shale concrete.

For the entire structure, including a connector bridge to a highway, a total of 2,360 cu. yd. of Haydite concrete was utilized. The saving in weight, compared with that of ordinary concrete, was 3,186,000 lb.

"Even that kid of mine knows what's best to build with!"

QUALITY CONTROL

comes first at... RINKER MATERIALS CORP.

Three years ago Rinker Materials Corp., West Palm Beach, Florida, purchased a Forney Compression Tester. Mr. T. W. Howard of this firm states, "We firmly believe the Forney Compression Tester has assisted us in maintaining our high standard of service. Installing a Forney Tester in *your* plant will increase block production, improve customer relations, boost your sales and give you a better yield. You'll be sure of the quality of your blocks each day through readings from the Forney copyrighted direct reading dial". Get additional information and a completely descriptive brochure today by writing Forney's.

RINKER MATERIALS CORP.
BLOCKS · CONCRETE · STEEL · BUILDING SUPPLIES
P. O. DRAWER 231 WEST PALM BEACH, FLORIDA PHONE 8111

September 2, 1953

Forney's Incorporated
P. O. Box 310
New Castle, Pa.

Gentlemen:

Paramount in obtaining the highest efficiency of operation in our block plant is quality control. This is obtained by daily use of a Forney Compression Tester.

Three years ago, as of this date, we purchased our Tester and we firmly believe it has assisted us in maintaining our high standard of service.

Very truly yours,
RINKER MATERIALS CORP.
T. W. Howard

TWH/dc

In the letter above another quality concrete block manufacturer, Mr. T. W. Howard of Rinker Materials Corp., West Palm Beach, Florida, explains how a Forney compression tester makes good block quality even better. You too can raise your quality and still cut costs with a Forney Compression Tester.

FORNEY'S, INC. MANUFACTURERS OF SPECIAL MACHINERY SINCE 1916
203 Elm St. New Castle, Pa.

Rx Ready Mix

By Harry F. Thomson

Abuse, Then Oversight, In Ice-Rink Floor

GOOD SERVICE by concrete is expected when it has been proportioned, mixed, placed, and cured in accordance with accepted practices. But the extraordinary merit of concrete is often exhibited by good service even though one or more of these steps has been wide of the "norm". Most men who have worked with concrete have known instances when the material had given excellent performance in spite of severe abuse in its early life. The first portion of the following account illustrates unusually good performance under conditions of abuse; and the latter portion reports the sad result from neglecting the effect of temperature change on a slab in place.

The management of a large indoor arena decided upon the addition of ice-rink facilities as a means of increasing patronage through skating, hockey, and ice carnivals. An additional concrete floor containing coils was to be placed on top of the existing floor, which was surrounded by a reinforced concrete wall forming the front of the box-seat section. Refrigeration and de-icing facilities were to be installed.

The construction of the concrete floor consisted of covering the old floor with 2-in. cork slabs, installing a grid of pipe coils supported on chains, laying welded mesh reinforcement, and then placing concrete with a total depth from cork to finished surface of 6 in. The concrete was 5½-bag ready-mix, made with ¾-in. gravel coarse aggregate. A small but experienced contractor was awarded the concreting work. He used conventional hand methods of screening and troweling, but produced an excellent job.

Two details of the construction were interesting, although both have been used in other similar installations. One was the insertion of brass strips on edge at 10-ft. spacing in both directions, similar to a terrazzo floor; the owners had been advised that these 1-in. strips would absorb the expansion and contraction from changes in temperature, as the floor was laid with only a ½-in. expansion joint between the edge of the slab and the reinforced parapet. The second feature was a series of brass sockets, set on a pattern, into which eye bolts could be screwed for securing the guy lines used to brace boxing rings, trapezes, etc.

As there had been serious delays in the construction, due to matters aside from the concrete work, an approaching schedule of contracted events at the arena made it necessary to rush the latter portion of the floor work; consequently high-early-strength cement was used in the last two days of concreting. The floor was finished only 48 hours before the first ice-hockey event opened. Actually, the refrigerant was turned into the pipe system imbedded in the concrete only about 40 hours after the last concrete was placed!

After two nights of ice-events the ice was removed by running hot water through the coils, and the arena was used for two nights for boxing and wrestling; then it was converted again into an ice rink. Thus within one week after the floor was finished and with only 40 hours of curing at 55 to 60 deg. temperature, the green concrete was frozen, thawed, and frozen again. Contrary to dire predictions as to the drainage to be expected from such an abuse, no surface spalling was noted, and only a few shallow shrinkage cracks appeared and those without any pattern.

Thereafter, the floor was used for all manner of events, with temperatures both frozen and ambient, as scheduled by the management. The concrete was considered to have given very good service, although in time a few minor cracks developed, either along brass strips or radiating from some of the pocket inserts. The fatal development after five years was that the pipe system began to leak at numerous points, due to rusting.

At this time the management decided on a new floor, the third, to be placed on top of the second; but this time special precautions were taken to obtain a "perfect" job. The work was done in the summer, when no events were scheduled and time was available for normal curing. The same company again furnished ready-mixed concrete, but a premium was paid for limestone aggregate in order to reduce expansion and contraction. A new layer of cork was placed, a new system of pipes was installed, and an out-of-the-city floor-specialty contractor was brought in to do the concreting. He used a revolving float-finishing machine instead of hand-finishing as had been done previously. The completed floor was a beauty.

When the hockey season arrived, the management advertised the improvements to the property, chief of which was the new floor, especially designed for an ice rink. But on the morning after the first ice-event the air about that arena was blue—and everyone who had had anything to do with the new floor was called in to see what had happened, and to offer explanations. The painful fact was that three large cracks had developed across the whole floor after the first freezing! It was quickly noted that these cracks were in line with the brass-socket inserts. Even after five years no such cracks had occurred in the previous floor. In the course of the discussion, it became known that the sockets in the new floor had not been installed independently in the new concrete, but had been made as extensions screwed into the inserts in the old floor. With the cork insulation between the two floors, the old one had remained fixed when the new one contracted with freezing; consequently the plugs, being secured to the lower floor, had remained stationary, and so had caused the new concrete literally to pull itself apart at the three cracks when contraction from freezing took place.

Fortunately the ready-mix producer had not been responsible for this feature of the installation; in fact, he had no previous knowledge of that detail of the construction. He could only express sympathy for the situation, and record in his memory the damage which had resulted from the oversight of the force of expansion and contraction due to a considerable variation in temperature.

Stone Joins Graystone Staff

The appointment of James R. Stone to its local sales staff has been announced by Graystone Concrete Products Company of Seattle, Wash. Mr. Stone's new duties will include specializing in block sales in the Seattle-King county area.

(Inset) Harry Deshler, President Superior Building Products, Inc. Plant is housed in a 50' x 162' concrete block building, produces 440-8 inch equivalents per hour.

Stronger Blocks made without steam

THERMOBLOC Direct Fired Heater Makes

New Process More Efficient and More Economical

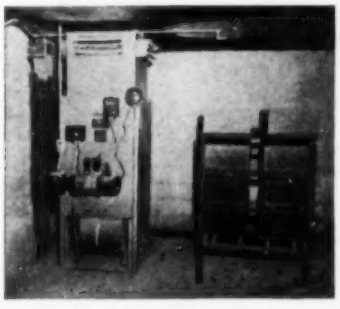
The Superior Building Products, Inc. of Toledo, Ohio, makes no secret of its production of higher tensile blocks at less cost.

Using heated air from a Thermobloc oil-fired heater, augmented by a fine water spray, the Company's method has resulted in faster, more economical curing with unloading breakage being practically eliminated.

A seven-day test on an 8-in. heavyweight block shows a strength of 864 psi gross area. A fourteen-day test of the same block shows a strength of 1405 psi.

No live steam is used in the process. Curing is accomplished through heated air furnished by a Thermobloc Heater. The compact, self-contained unit heats two kilns while occupying less space than is used by one block rack! Heat output is 200,000 btu. Air is circulated at rate of 2400 cfm. Fuel consumption averages an insignificant 1.75 gal. of No. 2 oil an hour.

For complete details on efficient, economical curing of concrete blocks, use the coupon for interesting booklet.



Model 200 Thermobloc. Unit heats two kilns. Note compactness.

THERMOBLOC ADVANTAGES FOR CURING CONCRETE BLOCKS

- Helps make stronger, more salable blocks.
- Insignificant unloading breakage.
- Low initial investment—Eliminates expensive boiler, pipe lines and installation.
- High heat efficiency—87% efficient in the above installation.
- Needs no attendant—Automatic temperature controls.
- Low operating cost. Economical clean fuel.

THERMOBLOC DIVISION

PRAT-DANIEL CORPORATION

Manufacturers of P-D Power Plant Equipment

15-5 Meadow Street South Norwalk, Conn.

Loading a 2-ton truck. Two such trucks deliver blocks within a 20-mile radius of the plant. Loading and transportation breakage is practically nil.

THERMOBLOC DIVISION
Prat-Daniel Corp.
15-5 Meadow Street, South Norwalk, Conn.

Gentlemen:

Please send me your booklet "Curing Concrete Block the Thermobloc Way."

NAME_____ TITLE_____

COMPANY_____

ADDRESS_____ CITY_____ STATE_____

6 REASONS FOR GOCORP LEADERSHIP

w we had no photograph for this ad[illegible] another RP development that will save labor and dollars for YOU.

THE "RACK-MAN" eliminates your offbearer operation completely. Production is no longer limited by human [illegible]. Rack-Man automatically takes the production from your block machine and indexes it into your racks. Also, empty pallets are automatically removed from racks and fed to the block machine.

THE "KING"—6 eight-inch equivalents per cycle. Conservatively rated at 3½ cycles per minute. With the plain pallet, hydraulic driven "King" you get top quality, top production and low unit cost.

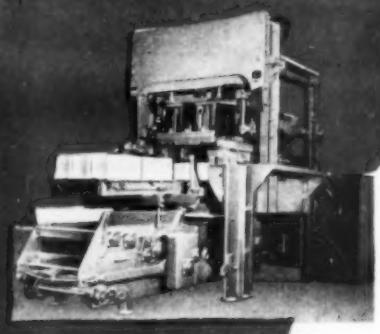
NOW YOU CAN MODERNIZE

Here's an outline of another GOCORP block machine called the "Trustee" because it protects the heavy investment many block plants now have in mold equipment and vibration motors. The "Trustee" will accommodate those items that were acquired for use on the older machine, yet give you the advantages of a modern hydraulic block machine—better quality, lower maintenance cost at equal or higher production.

THE "TRUSTEE"—Three 8" blocks on plain pallets—four or more cycles per minute—front pallet feed.

THE "SENIOR"

This plain pallet machine produces three top grade eight-inch equivalent blocks per cycle—4 or more cycles per minute. The smooth hydraulic drive, directional vibration, and sequence operation mean more profits for you at the end of the year.



THE BIG "75"—75 cu. ft. of concrete per batch. Five other GOCORP Batch Mixer models from 12 to 50 cu. ft. capacity.

THE "JUNIOR"

Low cost, cored pallet machine. The "Junior" Single produces one, the Twin produces two eight-inch equivalents per cycle, 3 to 4 cycles per minute. Either "Junior" gives you real economy with modern hydraulic drive and sequence operation.

OTHER COST CUTTING GOCORP EQUIPMENT
Block Cubers—boom or crane type • Skip Loaders—sizes to correspond with mixers Magnetic Offbearing Hoists • Attachments and improved Replacement Parts.

ALSO AVAILABLE
Forney Testing Machines • Lift Trucks • Racks Pallets • Other Supporting Equipment.

GOCORP
ADRIAN-MICH.
454 Grace Street Adrian, Michigan

CANADIAN NEWS LETTER

● The photographs above show some of the excellent displays of concrete products at the recent Canadian National Home Show in Toronto.

CONCRETE products manufacturers in the Toronto area were well represented at the annual National Home Show, held at the Canadian National Exhibition Coliseum building in Toronto early in April. No less than five booths were devoted to displays of concrete brick and block.

The display of Storrar-Dunbrik Limited of Weston, Ontario, featured a hanging fireplace, and the entire booth, designed by a Toronto architect, was built of colored brick.

Argo Block Co. Ltd., Cooksville, Ontario, took advantage of the opportunity to present three new products, their new split rock, Argo ashlar, and Hilltop Quarries building stone and flagstone. Their display also featured a fireplace.

Leaside Block and Tile displayed its Angel Stone. Also represented were Century Concrete Products Ltd., Concrete Products Ltd., and Construction Supplies Corporation Ltd., of Toronto.

The Home Show is designed to publicize new building techniques and products, and is attended by thousands each year. Concrete products manufacturers were well satisfied with results obtained from exhibiting in the show.

MEMBERS of the executive committee of the National Concrete Products Association met early in April to hear a progress report on their newly-inaugurated public relations program from Rae Perigoe of Presentation of Canada Limited, the firm handling the program.

Mr. Perigoe reported a survey was being made among architects, builders, and contractors to determine their present attitude towards concrete products. This project will precede an organized educational program to promote more efficient use of the products. Much favorable publicity has already been gained for the association, he said, and active promotion in the form of advertising and news stories in localized areas, as well as on a national level, is being planned.

Aid in promotion work is being received from the National Concrete Masonry Association, from Anchor Concrete Products Inc., Buffalo, from the Besser Manufacturing Company, and from Canadian cement manufacturing companies.

The Texas Ready Mixed Concrete Association will hold its annual meeting in Houston on June 11 and 12 1954. C. S. McLellan, Austin, is executive director. Those on the program committee are Scott Clark, Emmett Whitman, and Lawrence Fuqua.

Photo by courtesy of American Concrete Pipe Assn.

● Three lines of concrete pipe, each 9 ft. in diameter, were constructed recently to carry Hurricane Creek under a jet plane taxiway at the Memphis, Tenn., Municipal airport. Forcum-James of Dyersburg, Tenn., laid and joined 333 tons of pipe a day, installing the three 435-ft. long conduits in a week's time. William B. Fowler (city engineer) and Thomas Maxson supervised the design. The three lines of 108-in. pipe will easily handle a rainfall of 2 in. per hour. Carrying water at a rate of 8 f.p.s., they will convey 342,000,000 lb. of water per hour, flowing full.

Concrete Masonry Makers Form New Association For Southern California

A new consolidated masonry manufacturers association was formed in the Southern California area at an organization meeting held on March 30 at the Rodger Young Auditorium in Los Angeles. The new group will be known as the Concrete Masonry Association.

C.M.A. includes manufacturers of concrete block, lightweight concrete block, concrete veneers, and specialty concrete masonry. More than 50 major manufacturers from California, Nevada, and Arizona are represented in the organizational group.

This new unified organization is made up primarily of members of two former associations representing the masonry manufacturers in the area. The Concrete Masonry Institute of Southern California and the Concrete Masonry Manufacturers Association have combined to form the new Concrete Masonry Association.

Election of the board of directors was the primary business at the organizational meeting. Sam Hobbs of the Los Angeles office of the Portland Cement Association presided at this meeting. Later the board elected the following officers: president, E. P. Ripley, General Concrete Products Co., Van Nuys; vice-president, Mike Simovich, Chamco Block & Materials, Inc., Duarte; secretary, Lyman Chaffee, O'Kelley-Eccles Co., Baldwin Park; and treasurer, Homer Shirley, Superior Concrete Product and Building Supply, Temple City. Other members of the board of directors include the following: Pete Muth, Pumi-Blok, Santa Ana; Bruce Iliff, Pre-Cast Concrete, Long Beach; Roy S. Beal, Roy S. Beal Block Company, El Monte; Merrill Dastrup, Upland Concrete Block, Upland; Glenn Switzer, Transit Mix, Pasadena.

Offices of the Concrete Masonry Association are at 3250 West 6th Street, Los Angeles.

"Floating Convention" Slated By North Carolina C.M. Assn.

Seagoing business meetings are the thing, say members of the North Carolina Concrete Masonry Association, who on October 28 will sail for Bermuda from Morehead City, N. C., for their second annual meeting afloat.

The M. S. *Stockholm*, first trans-Atlantic liner ever to sail from a port in North Carolina, will be headquarters for the association on the voyage and while docked at the island. Those interested—friends are invited—may obtain details by applying to H. J. Stockard Jr., secretary-treasurer of the North Carolina Concrete Masonry Assn., 1410 Insurance Building, Raleigh, N. C.

Ohio R.M.C. Assn. Meeting Scheduled for June 15-16

June 15 and 16 are the dates for the annual meeting of the Ohio Ready Mixed Concrete Association, which will be held at the Hotel Cleveland, Cleveland.

A luncheon is scheduled for the 15th after the morning session, with Robert Collins, president of the National Ready Mixed Concrete Association, as the featured speaker.

● Officers and directors of the new Concrete Masonry Association, organized in Los Angeles. Seated (left to right): Lyman Chaffee, secretary; Homer Shirley, treasurer; Merrill Dastrup, director; Bruce Iliff, director. Standing (left to right): E. P. Ripley, president; Roy S. Beal, director; Glenn Switzer, director; Pete Muth, director; Mike Simovich, vice-president.

Basalt Rock Co. Homes Of Prestressed Panels Erected in Record Time

Want to build a low-cost house in a hurry? This is how they do it in California. At Napa, home of the Basalt Rock Company, Inc., orders are taken for the erection of the basic part of a precast concrete three-bedroom home in one day. Deliveries thus far have been kept to points within 150 miles.

Workmen deliver the precast expanded-shale concrete panels—9 ft. high, 6 in. thick, and from 10 to 32 ft. long—to the home site in the morning, erect them by crane on a pier-type foundation, weld them to each other, calk the exterior joints with mastic, and seal them with a water-proof cement wash. Window and door frames, conduit and piping, electrical outlets and switchboxes are all cast into the panels. A garage is included.

If the customer desires a precast roof, special roof panels are available. Cost of foundation, walls, and roof (delivered and erected) is about $6,300; without the roof, the cost is about $4,500. When completed by the contractor the house costs approximately $13,000. Included in the Basalt Rock "package" are such items as a precast fireplace, steel sash, window hardware, and door-frames and hinges.

1955 N.R.M.C.A. Convention Marks Silver Anniversary

It's early, but already plans are being laid for the silver anniversary convention of the National Ready Mixed Concrete Association, which will be held on January 9-13, 1955, at Miami, Fla. This outstanding event will take place simultaneously with the 39th annual convention of the National Sand and Gravel Association. No machinery show is planned, unless manufacturers make arrangements for outside displays.

Convention sessions will be held in the Miami Municipal Auditorium. There will be no specific headquarters hotel, but the Miami Convention Bureau is arranging with Miami hotels for accommodating delegates and guests. In case you are interested in extracurricular activities, plans are being formulated for post-convention trips to Cuba, the British West Indies, Puerto Rico, and other vacation spots.

The Marietta Concrete Corporation, Marietta, Ohio, recently purchased the Concrete Manufacturing and Supply Company of Nashville, Tenn., producer of concrete building block and other precast items.

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OF ITS TYPE.

more than 2,127,500 hours of dependable service on every type concrete pour in all parts of the country.

CHALLENGE GEAR REDUCER. Not a reworked truck axle, but a field-proved, worm gear reducer, engineered, designed, and manufactured by Challenge, especially for ready mixed concrete service.

SIMPLE IN DESIGN • MINIMUM MAINTENANCE. Only 9 moving parts, including bearings, require nothing more than normal lubrication.

TOUGH AND RUGGED. Weighs just 300 pounds, yet it has strength where strength is needed to withstand the most severe operating conditions.

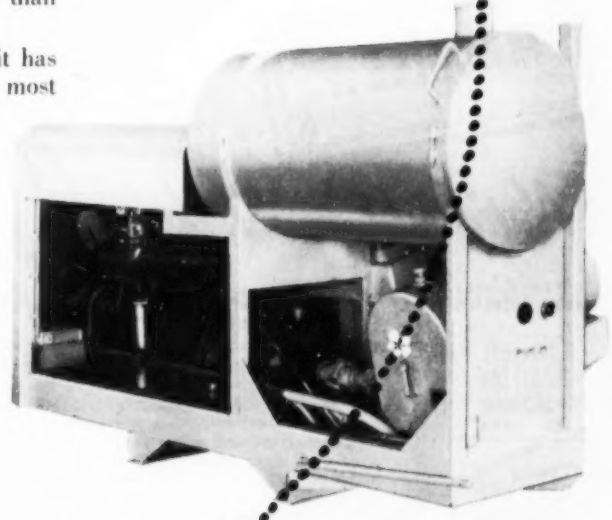
HEAVY DUTY, SOLID NICKEL BRONZE WHEEL GEAR provides proper ratios for longer life of both mixer engine and transmission.

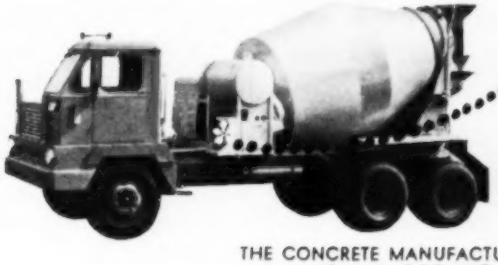
LARGE OVERSIZE BEARINGS AND DRIVE SHAFT. Largest used on any make mixer.

SAFE. Sealed housing for worm and gear. No dangerous gears, belts or pulleys out in the open.

NO BRAKE REQUIRED. Worm and gear minimize drum roll-back. When drum is stopped, it moves only a few inches, compared to other mixers where the drum swings back and forth as much as one-quarter to one-half revolution.

EXCLUSIVE CHALLENGE INTEGRAL DRUM AND DRIVE MOUNTING withstands the most severe stress and strain of off-the-highway operation.





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Exclusive National Distributors For CHALLENGE TRUCK MIXERS ... Standard Of The Industry

Michigan R.M. Producers Elect Boichot President Of State Association

About 60 members of the Michigan Ready Mixed Concrete Association gathered on April 13 at the Union Building of Michigan State College, East Lansing, for the organization's second annual meeting.

After the sessions of the board of directors and various committees a film on the transportation, placing, finishing, and curing of quality concrete was presented by James Kratzer, field engineer, Portland Cement Association. Panel members in a discussion on taxes included the following: Claud Bosworth (moderator), Michigan State College; John Chamberlin, Michigan Department of Revenue; and Lyle D. Hepfer, C.P.A.

During the business meeting the following officers were elected for the coming year: president, Donald Boichot, Boichot Concrete Products Corporation, Lansing; vice-president, Frank Andersen, Anderson Sand & Gravel Company, Saginaw; treasurer, Stanley Ernst, Ernst Fuel & Supply Company, East Detroit; and secretary-manager, J. Revell Hopkins, Lansing.

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One man can unload coal, coke, cinders, sand, stone, aggregates and other bulk materials in a few minutes. Eliminates the most dangerous part of unloading work, as workmen are seldom needed in or on cars. SAVES labor—SAVES wages—SAVES time!

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Satisfied users say that the National Car Shaker saves up to 80% of unloading costs and *pays for itself* in increased profits. It can be used wherever hopper bottom cars are unloaded.

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Warner Company Records 160 Years of Operation In Philadelphia Area

From an interesting story in the March issue of the *Warner News*, official publication of the Warner Company, we learn that this venerable firm was founded as a shipping business just 160 years ago by John and William Warner, whose vessels plied the Delaware River between Wilmington and Philadelphia. Within a few years, however, they expanded the operations and began shipping to ports as far distant as the West Indies.

By 1800, spurred by the demand for building sand, the brothers had begun operating a sand business along the beaches of the Delaware on the Jersey side. Production in that day has been estimated at about 200 to 300 tons per month. Today the minimum is 400,000 tons.

Through the intervening years the Warner Company has added many products to its line, which now includes ready-mixed concrete, crushed gravel, crushed limestone, crushed stone, dry-batched aggregates, fluxing stone, and lime.

It has been a long and sometimes arduous way from the days of shovel and wheelbarrow operation along the Delaware, when a schooner would be loaded with a cargo of not over 80 tons, to the present complex operation. Warner still moves about two-thirds of its tonnage on the same river, but now three big diesel tugs and a fleet of 80 barges, each carrying approximately 1,000 tons, are needed.

Addition of lime to the company's products began with the acquisition of the managership of the Cedar Hollow Lime Company early in the century. Subsequently Warner acquired the property and business of the American Lime and Stone Company at Bellefonte, Pa.

According to Charles Warner, chairman of the board, teamwork among the members of employees and management has been responsible for much of the success of the 160-year-old business. He also acknowledges the confidence and faith of the company's 3,000 "partners", its stockholders.

Notices of additions to the concrete products industry have reached us from several states. Among the more recently opened installations are the North Dakota Concrete Products Plant, at Williston, N. D., and the Valley Concrete Company, at Rocky Ford, Colo.

RADIO OPERATING

THE LICENSEES of some radio systems demand brisk, crisp message handling—others prefer the casual approach—many have little or nothing in the way of set routine. Yet, any of these types of operation may or may not be efficiently transmitting intelligence. When good equipment has been installed in a satisfactory location, the remainder of the problem is in the hands of the radio operator.

One basic precept to follow is that every message not transmitted with complete clarity will be garbled in reception and that every message which might be misunderstood at the receiver will be misunderstood. Thus, every message should be handled individually and distinctively. Except in unusual cases, repetition and explanations should not be required.

Speech Until recently, very few communications radio operators have been specifically chosen for their voice qualities, as is done in the radio broadcast industry. While it cannot be expected that the communications operator's speech should be equal to that of a broadcast announcer, each operator and each chief operator should strive for that goal. Further, each operator should be familiar with the full scope of operations he directs and be fully conversant with all terms employed in the performance of his duties. Similarly, if each mobile operator is familiar with the standard operating terminology, needless explanations can be avoided.

Because of the growing importance of two-way radiotelephone systems in ready-mixed-concrete truck dispatching operations this article discussing some basic rules for the operators of such systems should command wide attention. It appeared originally in the November-December, 1953, issue of the Motorola Newsgram. —The Editors.

Speech training programs conducted by a chief operator, or even practice by the individual operators, will add much to improving efficiency of message transmission. A tape, wire, or disc recorder provides an excellent medium for speech analysis. A little diligence can transform an average or poor operator into a good operator. Among the speech factors to be considered are voice level, voice quality, pronunciation, and enunciation.

While FM does provide the best medium for voice transmission, it alone cannot improve poorly spoken messages. The message which is received with maximum clarity is that which is spoken in a normal voice, slowly and distinctly. A low voice level into the microphone will result in a low voice level out of the speaker. A loud voice, *i.e.*, a voice louder than that necessary to produce full modulation, will not produce greater speaker output since it will be limited in the transmitter. In fact, shouting, or a loud or emotional voice is more difficult to receive than a normal voice primarily because of the added voice distortion.

Pronunciation Unless corrected by training, many people normally tend to speak too rapidly, to slur words and phrases, and to fail to open the mouth sufficiently when speaking. Radio operators should take special care to speak with the mouth open, to avoid a nasal or guttural tonal quality, to pronounce each individual syllable of each word, enunciating clearly, to maintain a fairly constant voice level, and to speak slowly so that each syllable will be clear and distinct. Breath control and proper use of the throat, mouth and lips are all important parts of each of these functions.

Difficult words should always be spelled out. The phonetic alphabet should be employed whenever it is necessary to distinguish letters clearly. For example, "Baker" and "Peter" are much easier to differentiate at the receiver than are "B" and "P".

While a speech clinic at a local educational institution can be of

The primary function of any 2-way radiotelephone system is the transmission of intelligence. Does your system fulfill its function adequately?

Spell out difficult or unfamiliar words. Shouting impairs intelligibility. Code signals simplify message transmission.

great value in speech improvement, attention to the fundamentals and continuing practice, striving for improvement, can achieve adequate results.

Practices It is, of course, necessary to have suitable performance specifications in the radio transmitters and receivers and adequate maintenance plus proper level settings for the system. Yet, this is not fully adequate as far as equipment performance is concerned. The base station dispatcher should be located in an area free of ambient noise. Background noise interferes with both transmission and reception. Noise-cancelling microphones should be used if necessary. A sound-proofed radio operating room is highly desirable. Similarly, location of the base station equipment in an area of high RF noise level can cause degradation of intelligibility. A remotely-controlled base station in a quiet area can reduce this problem. With these considerations taken care of, other practices can improve message handling.

Each operator should be instructed in proper microphone usage. While the distance between the operator and the microphone may vary somewhat in different installations, the operator should be aware of the best distance for his voice. Low microphone sensitivity settings make it difficult to achieve full modulation; high sensitivity may pick up too much background noise.

The operator should speak across the face of the microphone, avoiding breathing into or blowing into it. A military-type microphone should be held within one to two inches of the lips and at an angle of about 30 deg. with the lips. The push-to-talk or transmit switch should be held down firmly during the entire message transmission, and speech should not be started unless the switch is "on".

Codes Code systems have come into widespread use to shorten message transmissions. Probably the best known code is the "10 Signal" system employed by law enforcement agencies. Other codes such as specific numbers assigned to vehicles, to routine operations, and to specific working areas can do much to simplify transmissions to mobile units. A practice as simple as a momentary depression of the "transmit" switch to acknowledge message receipt without voice transmission has been employed. A code system for a specific application can be easily developed and can save considerable "air time", improving message handling efficiency. Even on an uncrowded channel, adoption of a code system prepares the staff for the expansion of the system when transmit time may be more valuable. It also provides a solution to channel-sharing problems with other radio systems if they arise.

RULES FOR OPERATORS

1. Speak in a normal voice.
2. Keep your voice level constant.
3. Speak slowly and calmly.
4. Pronounce each word and each syllable.
5. Spell difficult words.
6. Use the phonetic alphabet.
7. Keep messages brief but complete.
8. Use the microphone properly.

The code system achieves the result of transmitting sufficient information without the time-wasting processes of calls for additional information and wordy messages containing more data than required for a mobile unit to complete its assigned tasks. With or without codes, messages should be kept brief and concise, but not at the expense of making the messages incomplete.

Checks As a rough rule of thumb, if it is necessary to repeat messages, or if messages are consistently misunderstood, the operator responsible should have further training. If you are an operator, check yourself; if you are a chief operator, listen to your staff. Find out if you can improve your system in its primary function.

New R.M.C. Plants Reported In Many Sections of U.S.A.

Newly-established ready-mixed concrete operations continue to be in the news. Recent announcements of producers who have opened new plants or who have added ready-mix to their lines include the following:

Lebanon Ready-Mix Concrete Company, Lebanon, Ky.; Atlas Ready-Mix, Mandan, N. D.; Lambert's Concrete Works (added ready-mix), Sulphur, La.; W. T. Liston Company (concrete pipe makers who added ready-mix), Harlingen, Tex.; Florence Redi-Mix Concrete Company, Florence, Oreg.; Walnut Creek Aggregate Company (added ready-mix), Walnut Creek, Calif.

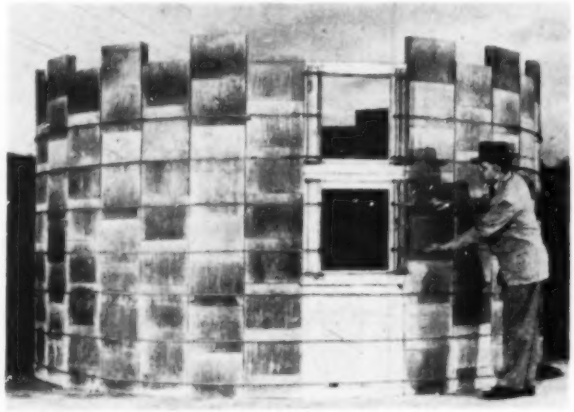
New A.S.T.M. Specifications For Lightweight Aggregates

Committee C-9 on Concrete and Concrete Aggregates, American Society for Testing Materials, approved at its last meeting new tentative specifications for lightweight aggregates for concrete masonry units. The subcommittee responsible for developing the specifications is headed by Paul M. Woodworth, vice-president, Waylite Company, and includes technical representatives from various organizations active in the lightweight aggregate field.

The specifications impose requirements on the aggregate as to grading, unit weight, and deleterious substances, as well as requirements regarding certain properties such as drying, shrinkage, and surface pop-outs.

Copies of the tentative specifications, when printed, will be available from the American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa.

Harry A. Barney, vice-president of Barney & Dickenson, Inc., Binghamton, N. Y., producers of sand and gravel and ready-mixed concrete, has been elected president of the Associated Building Contractors of the Triple Cities, Inc.



• Paul Klemens, assistant sales manager for Columbia Machine Works, Vancouver, Wash., demonstrates the method of placing steel tie rods on a silo constructed of Columbia's new 12-in high silo staves. These units are produced on Columbia's combination tile-and-block machine. The tie rods are said to provide well-sealed construction without the use of mortar.

Hydraulic Power and the Industrial Truck Part I

By R. K. GOULD
Technical & Research Division
The Texas Company
New York, N. Y.

IN the year 1906 more speed and power were required for handling an increasing volume of baggage at a Philadelphia railroad station. To satisfy this need, an electric motor and storage battery were installed beneath the platform of an ordinary baggage truck, and controls were placed on the steering handle. This event is generally regarded as marking the birth of the powered industrial truck industry.

Although this use of battery power was a substantial improvement, the first industrial trucks still had to be manually loaded and unloaded. It wasn't until about ten years later that the power-operated low-lift platform truck made its first appearance. This equipment permitted the first real mechanized handling. The trucks could pick up, carry, and deposit loaded skid platforms, skid racks, or skid bins without rehandling.

This development was followed in about 1918 by the high-lift platform truck which was so designed that loads could be lifted high enough to permit stacking, thus saving valuable floor space. The practicability of this handling system was so obvious that the next efforts were directed toward a system suitable for still broader applications.

The basis for such a system was the fork truck developed in the early 1920's. It was realized that if forks or prongs were used as the lifting and load carrying media, they could chisel under some loads or pick up others if they rested merely on relatively cheap pallets, rather than the expensive skids.

The first fork trucks lifted the loads straight up and down. It was soon apparent that the loads could be carried more safely if the forks could be tilted back and unloaded more easily if they could be tilted forward. Thus the tilting fork truck was developed in the late 1920's.

From these modest beginnings the industrial truck industry has grown to the stage where its yearly production is in excess of $200,000,000, and it continues to expand. Developments and improvements have been too numerous to mention. Trucks with maximum load capacities ranging from ½ ton to more than 50 tons are now available to satisfy practically every materials-handling problem that may arise.

Principal Types The types of industrial trucks most commonly employed and their prime functions are described briefly as follows:

Low-lift platform trucks are most frequently used with skids or skid-bins. Their ability to keep production machines operating by moving heavy loads in congested areas, where lifting power is needed to take the load off the floor, is an outstanding advantage.

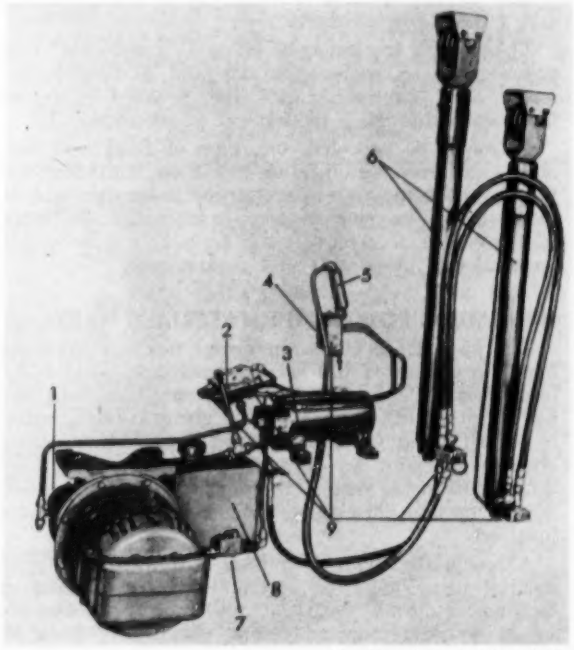
In addition to performing all the functions of the low-lift truck, the high-lift platform truck can stack heavy loads on skids ceiling high, thus saving floor space.

Motorized pallet trucks are similar to the hand pallet trucks and are led by an operator on foot. They are available in either a low- or high-lift version, and the lifting mechanism is operated by foot or by motor.

Ram trucks are particularly suited for handling operations in steel mills, where an individual item to be moved may weigh as much as 50 tons.

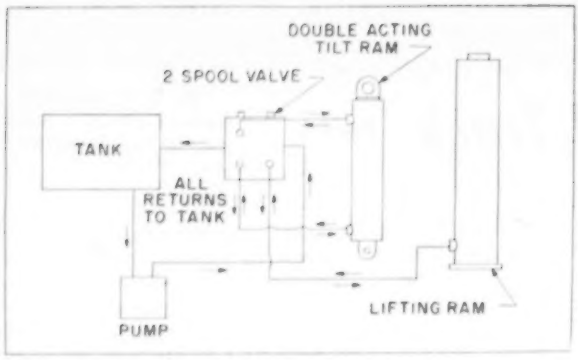
The fork truck is undoubtedly the most versatile tool for industrial materials handling, and can perform every handling operation in receiving, processing, assembling, storing, packing, and shipping. At first the fork trucks were designed to handle skids and pallets and were provided only with raising and lowering motion of the carriage and the in-and-out tilting motion of the mast. A truck of this type is today generally regarded as a standard model. Most of them are equipped with telescopic upright sections which permit the truck to pass through areas of low clearance, yet, with uprights extended, to stack materials at heights considerably greater than the truck itself. Such trucks also have a maximum amount of "free-lift", which is the distance the load can be raised from the ground before the uprights or structures begin to rise. This is essential for stacking and tiering in box-cars and low-ceiling warehouses.

Vast assortments of special accessories are now available for use on a standard truck, making its versatility practically unlimited. Some of the special auxiliary features adaptable to the fork truck include the following: scoops, shovels and bins for handling bulk material; clamping devices for handling drums, paper rolls, bales, and light, bulky cartoned merchandise; side-shifting devices for accurately spotting loads; push-off and pull-on devices for automatic loading or unloading; revolving



Courtesy of Lewis-Shepard Co.

● The hydraulic system in an automatic fork-lift truck—(1) pump, (2) tilt valve, (3) tilt ram, (4) lift valve, (5) high-pressure filler, (6) lift rams, (7) relief valve, (8) reservoir, (9) flow regulators.



● Typical hydraulic circuit for a fork-lift truck.

and rotating heads of special design for upending loads or turning them on their side. These are only a few of the special accessories available, but they serve to indicate the degree of flexibility that can be imparted to the fork truck. Its versatility is such that in some instances it is almost human. For example, a fork truck equipped with a paper roll clamp can pick up a roll four feet in diameter and weighing two tons, regardless of whether it is standing vertical or lying horizontal. It can rotate it, move it up and down, shift it sideways, and place it accurately on a given spot.

Motive Power In addition to being characterized by the nature of their handling functions, the industrial trucks are also identified according to the type of motive power employed. Although a discussion of motive power is outside the scope of this article, mention should be made that the trucks may be electric, gasoline, or diesel powered, and some are available that operate on propane.

The electric truck is powered by a storage battery and a direct-current motor.

The gasoline truck may be either a "gas-electric" type, powered by an engine-generator and a direct-current motor, or a "gas-mechanical" type, powered by a gasoline engine through a mechanical transmission.

As might be expected, one type of truck will have advantages over the others in certain circumstances; and the choice of one type in preference to another will depend upon a number of factors, including the nature of the service to which it will be put and the overall economies of initial cost and maintenance.

HYDRAULIC POWER FOR MATERIALS HANDLING

The importance of the industrial truck to materials-handling operations has been stressed, and mention has been made of the variety of functions it can perform, but so far no indication has been given as to the means by which these functions are accomplished. A casual observer watching an operator put an industrial truck through its paces merely by finger-tip manipulation of a lever or two must surely be convinced that magic is involved.

Although the many operations performed by the industrial truck could be accomplished by electrical or mechanical devices, hydraulic power is by far the best suited and the most adaptable, particularly from the standpoint of economics of design and simplicity of construction. Hydraulics offers a relatively simple method of applying great forces with a flexibility of controls that is astounding and has many inherent advantages over other types of power. Most hydraulic systems are relatively simple in design. The need for complicated systems of gears, cams, and levers is eliminated. Motion can be transmitted without the slack inherent in the use of all solid machine parts. The liquids used are not subject to breakage as are mechanical parts, and due to incorporated self-lubrication characteristics, wear of moving parts is reduced. The component parts of a hydraulic system can be located at widely separated points, and the forces generated rapidly and transmitted over considerable distances with small loss. The forces can be efficiently carried up and down or around corners without the aid of complicated mechanisms. Very large forces can be controlled by much smaller ones and can be transmitted through comparatively small pipes and orifices. A hydraulic system can provide smooth, flexible, uniform action without vibration or being affected by variations of load. Hydraulic systems can also provide widely variable motions, and can automatically be protected against breakdown and strain.

Advantages An industrial truck usually will be required to perform at least two functions, such as hoist, tilt, clamp, rotate, push-off, pull-on, etc., and frequently three, four, or even five such functions. The operation of each function by electrical or mechanical means would necessitate the use of several motors, multiple control devices, gear reduction units, and other auxiliary equipment, all of which are relatively expensive both to install and to maintain. Also, it is essential that the overall size of an industrial truck be held to the absolute minimum for easy maneuverability and use in confined areas. The large amount of space required for the equipment needed for electrical or mechanical transmission of power would be most undesirable. With a hydraulic system, however, a single pump can supply the source of all the power required; and a suitable system of valves, operated by simple control levers, enables the power to be directed to any of the multiple functions. The valve arrangement is such that when the power is diverted to any one operation, the others are not disturbed but remain fixed.

Industrial truck operations also involve some other essential requirements:

Overloading must be prevented: a truck designed for a given capacity should never carry loads in excess of that capacity.

Control must be exercised over the pressures developed in some of the functional operations: in clamping a fragile item enough pressure should be exerted to grasp it firmly but not so much as to crush it.
Motion of the various materials-handling functions must be limited and controlled to prevent over-travel and subsequent damage to the truck. For example, in hoisting a load, the lifting power should be discontinued when the load has been raised to the maximum allowable height.

Hydraulics permits these requirements to be met very simply by the use of pressure relief valves set to pre-determined valves and placed at convenient locations within the system. Elaborate mechanisms at considerable cost would be necessary to obtain the same features by other means.

Hydraulics also allows precise control over the speed with which the handling functions can be performed. The simple movement of a valve will adjust the rate at which a load can be raised or lowered.

Finally the safety feature of hydraulic power is most attractive. The danger of a heavy load accidentally dropping and causing injury is almost negligible. If

perchance a line in the system should break when the load is elevated, appropriate flow or check valves located within the hoist cylinder will either keep the load suspended or allow it to be lowered gently.

These are some of the reasons why the industrial truck industry is relying more and more on hydraulics as the backbone of attachment design.

Hydraulic Systems Before discussing the application of hydraulics to the materials-handling operations of the industrial truck, it might be advisable to review briefly some of the fundamentals.

All modern hydraulic systems are based on Pascal's discovery in 1653: "Pressure exerted on a confined liquid is transmitted undiminished in all directions and acts with equal force on all equal areas." Since liquids are essentially incompressible, the pressure applied to a liquid at one point will be transmitted to any point within reach of the liquid. A hydraulic system, then, is an arrangement whereby pressure applied to a liquid can be coverted into mechanical work. Fundamentally it consists of the fluid, a unit for generating force or energizing the fluid, suitable means for containing and transmitting the energized fluid, and units for converting the energy in the fluid into mechanical work. In order for any system to be operative, of course, there must be such auxiliary equipment as valves to control the flow of fluid and limit the amount of energy imparted to the fluid, a reservoir to contain a supply of the fluid, and lines to return the fluid to the reservoir after it has served its purpose.

There are certain features which are basic and fundamental to the hydraulic systems of all industrial trucks, regardless of the type, make, or number of handling operations involved. Some of the general characteristics and requirements of these components are discussed briefly as follows:

Reservoir Although the main purpose of the reservoir is to serve as a storage vessel for the hydraulic oil, it is actually much more than that. It is here that any air entering the system must escape; it is here that contaminants such as dirt and water must settle; and it is here that the heat content of the returning oil must be dissipated.

In order to accomplish these supplemental functions satisfactorily, the reservoirs must be designed with extreme care.

The reservoir design in an industrial truck is particularly critical. In most hydraulic installations space is not a factor, and the capacities of the reservoirs are usually such that the hold-up time of the oil in the reservoir is relatively long. This facilitates the separation of air and contaminants and the removal of heat. However in the interest of keeping the overall size of an industrial truck to the minimum, the capacity of the reservoir is not any larger than necessary.

It is imperative that air be prevented from entering the pump suction line, as this would not only cause erratic operation of the hydraulic system, but would also accelerate pump wear. Certain design features are observed wherever conditions permit in order to reduce the possibility that this will occur. For example, the reservoirs are usually deep and narrow, rather than shallow and wide, to minimize the chances of the oil level becoming so low as to approach the level of the pump intake. The pump suction line is located near the bottom of the reservoir in such a manner as to prevent the formation of a whirlpool such as occurs when water is drained from a bathtub. Such a condition would cause air to be drawn into the system. To reduce the tendency toward foam formation, which is another means whereby air can enter the pump, the line returning the oil to the reservoir usually extends well beneath the oil level and on the opposite side from the intake.

The incorporation of a vertical baffle in the reservoir, separating the pump intake from the oil return, is also frequently used to allow the oil returning to the vessel more time to separate contaminants and dissipate the heat before it is again picked up by the pump. As a further precaution that no solid contaminants in the reservoir enter the pump, a screen-type filter is usually inserted in the intake line.

Generally there will be a combination air vent and filler cap on top of the reservoir, and in order to keep atmospheric dust and other materials from entering, the cap will be equipped with a screen and an air filter. If the truck is operating in a particularly moist atmosphere, a drier also is installed in the vent.

(To be concluded next month)

William T. Young has been appointed manager of masonary cement Company, Detroit, Mich. Mr. Young has been a member of the Huron staff since 1949, and has been doing research in the relation between bond and the surface physics of masonry.

John Hilliker and Lawrence Sadler have purchased the Kent Concrete Products Company at Seattle, Wash. Under the new owners the plant will continue to turn out concrete products, major items being septic tanks and drain tiles.

Frank Hedger, co-owner of the Hedger Brothers Concrete Products Company at Jonesboro, Ark., died recently in that city of a heart attack. He was 37 years old.

● Ivy H. Smith (left) being welcomed into the Wire Reinforcement Institute by Don M. Schmid, president of that organization, at a recent meeting in Washington, D.C., prior to the annual Highway Research Board conference. Mr. Smith is immediate past-president of the American Concrete Pipe Association and also president of the Sherman Concrete Pipe Company, Jacksonville, Fla. The Wire Reinforcement Institute is a trade association of the manufacturers and producers of over 95 percent of the welded wire fabric used in this country.

Concrete Pavement Found Easy on Gas Consumption

More miles per gallon! Different types of road surfaces have been studied by engineers and highway groups for many years as to their effect on mileage. Professor Ralph A. Mower of the University of California points out that tests conducted in Iowa in 1934 and in Kansas ten years later showed essentially the same results. The average mileage, at the average speed of 43 m.p.h. on concrete roads *was 19 miles per gallon.*

On various asphalt-treated and road-mix surfaces, it was 18.6 miles per gallon. On smooth gravel roads, the mileage was 17 miles per gallon and on loose gravel, only 14. On soft wet gravel the figure dropped to 11 miles per gallon—and on barely passable mud, the *motorist averages just seven miles per gallon.*

BOND BETWEEN MORTAR AND CONCRETE MASONRY UNITS

another P.Q. exclusive

By JOHN C. THORNTON, A.I.A.

FOR NEARLY three years the writer and his colleagues have carried on a series of experiments on bond between masonry units and various mortars, with startling results. While working with the Huron Portland Cement Company on mortars, it was noticed that with a rough rug brick very poor bond was achieved, while with a smooth brick of the same shale the bond was nearly perfect. This led to a long series of experiments, the results of which were published with many illustrations in the April, 1953, issue of the *Journal of the American Ceramic Society*.

While our research covered burned products (brick, for the most part), we also did some work with cinder brick. This work showed that in all probability the same things relative to bond applied to other forms of masonry units, such as concrete masonry units and building stones.

We noticed that water rose up the rough sides of the brick, but not on the smooth back; so experiments were made with brick of many different finishes. In these experiments it was found that the capillarity of the faces of different finishes varied to a high degree. There was practically no capillarity with smooth brick, while with some sand-molded brick we sometimes noted as much as a 6-in. rise in 15 minutes. This was found by placing the brick in ½-in. of water. Some brick surfaces showed high capillarity one way and little or none the other. We are using the term capillarity as meaning water moving along the surface because of the surface texture, and not in the sense of rising in the interior of the brick. Absorbing water quickly is called suction and is expressed by the amount of water 30 sq. in. of the unit will take up when placed in ⅛ in. of water for 60 seconds. It is commonly held that the number of grams of water taken up under these conditions should not exceed 20. When the suction is over this amount, it has been believed that the units must be wet before laying. We found there was no relation between suction and surface capillarity.

We had noticed that as a rule mortar did not get back in the crevices of very rough brick, so bond tests were made with bricks of different surface finishes or textures.

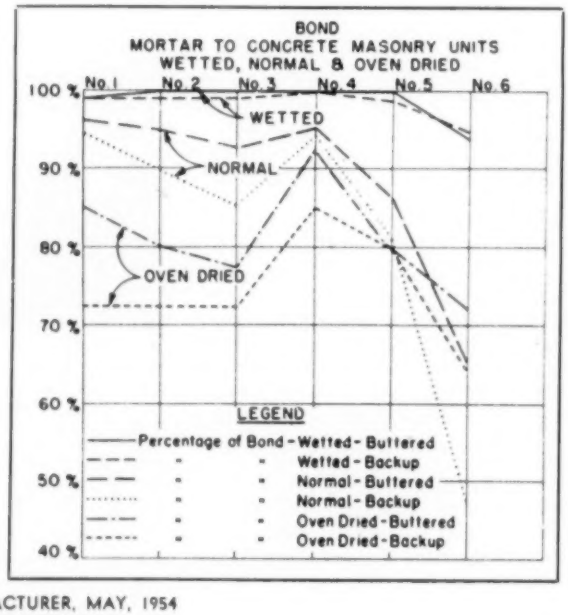
These experiments showed us that the amount of bond between the mortar and the unit was inversely proportional to the amount of capillarity of the surface of the unit; that is, we had almost perfect bond with smooth brick which had no capillarity, and the bond decreased as the capillarity increased. Some brick which had as much as 6 in. of capillarity in 15 minutes showed about 25 percent bond. The almost straight-line curves for bond and capillarity showed a nearly perfect X, indicating a definite relation between the two.

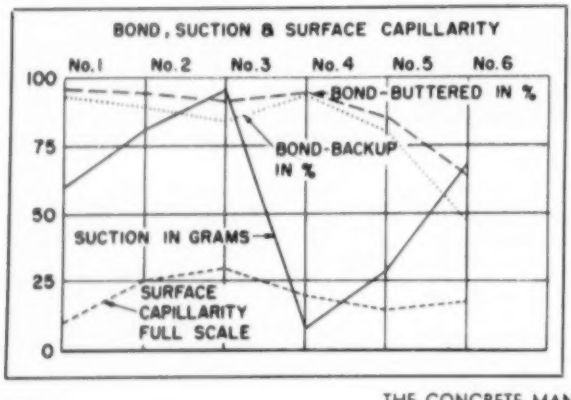
These experiments were carried further by means of chimneys or wells. Dye was put into the water so that the paths of leakage could be traced. Leaks were counted, and later the panels were torn down and the dyed areas, which showed the amount of penetration of the water, were recorded. The results of these experiments showed the same thing—that the amount of dye penetration, which indicated lack of bond, followed the amount of capillarity on the surface very closely.

We have always believed that masonry units with high suction should be wetted just before laying, or the water in the mortar would be sucked into the unit and poor bond would result. Our experiments have shown that the surface of some units, altough the suction is low, can cause the water to be drawn from the mortar and produce poor bond. To prove this, several kinds of brick were laid in mortar, and it was found that in some cases water was pulled from the mortar and spread out on the face of the unit as much as 1 in. for over 2 hours. Our theory is that a sanded or rough unit has a much greater area than a smooth unit and that there is a quick pull of moisture, causing a rather quick

Figure II ▶

Figure I ▼





drying of the surface of the mortar, allowing only a pin-point contact. Then further moisture finds its way to the surface around the particles of sand by capillarity and out on the exposed surface, where it is lost by drying. We believe many cases of cracks between the mortar and the unit are due primarily to the lack of bond, rather than to shrinkage of the mortar. If there is no bond, we can expect a greater shrinkage than would be normal if there were bond. We had reason to believe that this also applied to concrete units; and experiments which will be discussed later proved interesting in this connection.

Wetting of sanded and sand-molded brick of low suction increased the bond materially. With sand-molded brick, it increased the bond in some cases from 25 to 95 percent. On the other hand, wetting did not help with some finishes.

It was found that wire-brushing some sanded brick could increase bond materially; and it was also noted that such brick would give better bond if they were handled several times or if they lay around the yard for periods of time, permitting them to shed the sand. The size of the sand particles is immaterial; the whole thing seems to hinge on whether the particles touch each other, causing capillarity.

In preparation for the writing of this paper, we decided to carry on a limited program of tests to determine whether bond to concrete units followed the same lines as with burned products.

We obtained samples of six different concrete units, including both heavy and lightweight aggregate, and tested for bond, as we had done with burned units. The samples were solid brick-size units.

The suction of each unit was as follows:

No. 1—Suction 60.42 grams
No. 2—Suction 82.11 grams
No. 3—Suction 96.0 grams
No. 4—Suction 9.84 grams
No .5—Suction 29.61 grams
No. 6—Suction 69.30 grams

We have reason to believe that the results will vary considerably in units of the same aggregate.

Next they were tried for surface capillarity. Unit No. 1 had very little, No. 2 about twice as much, and No. 3 about three times, or 1½ in. The other three ran from ¾ to 1 in. Of course, surface capillarity does not show up properly on high-suction units as the moisture goes into the unit as it rises. The time used to determine capillarity was 15 minutes.

Bond tests were then made in the same manner as those previously made with burned units. In these tests bond was determined without wetting, and unusually good results were obtained. The bonds obtained in Units 1 to 5 were so close that the differences were negligible. Number 6 dropped off, probably due to the greater roughness of the surface.

One of the peculiarities discovered was that suction did not appear to be related to bond. With Units 1 to 3, the suction and surface capillarity went up as the bond dropped, but the difference of bond was too small to be of consequence.

Concrete masonry units containing sand should not be confused with sand-molded or sanded-clay units. With the concrete units the surface is smoother and the surface capillarity is not high.

Roughness, referred to as popcorn texture, appeared in some cases to affect bond with concrete units more than anything else. Later experiments have not borne this out, however, except in a few cases. This texture is caused by the method of manufacture, and it would be well to do further research on this phase of bond. If the relationship actually exists, effort should be expended to make contact surfaces somewhat smoother.

Figure 1 gives the results of all these experiments in graph form. The bond varies but is excellent in all except No. 6. Here we have reason to believe the surface of the unit affects the bond. The heavy line showing suction seems to indicate that there is little if any relation between suction and bond in concrete units. There is some relation between capillarity and bond, but it is not consistent and not great in any case.

In order to determine the penetration of water through concrete unit masonry walls, six chimneys were built with burned units in previous tests. They were built as follows:

The block panels were built 8 in. thick, using two 4- by 8- by 16-in. block. Spaces between the inner and outer blocks were filled with mortar.

The brick chimneys were also built 8 in. thick. The block were two and the brick six courses high. A course of brick was laid before starting the block walls. Workmanship was the best, and in the case of the brick full mortar joints were used throughout.

These chimneys did not give us as much information as we obtained with burned units. Penetration of the dye started almost immediately, but the water went through the units themselves and not through the joints. It occurred at once with all the brick units except No. 4. With these the penetration was delayed, but it did occur later. The deep frog on some of the units could not be filled with mortar, and penetration occurred at these points. Most of the backup sides of the joints that showed dye indicated that the same condition existed with concrete units as we had found with burned units. The mortar is a little dryer on the backup than on the buttered end, and a poorer bond is obtained. This was more common with the block than the brick units, probably due to the longer period of time consumed in laying the larger units. We did not find much difference between the rough and the smooth faces, which was contrary to previous experiences and therefore not expected. Dye was found between the mortar and the units; but it was usually spotty rather than continuous, which indicated that the dye reached the mortar through the unit and not through the joint. When the units were broken, it was found that there was dye penetration through most of them.

The dye was lost so rapidly with the concrete unit chimneys that the tests were run but one hour with the block chimneys and two hours with those built of brick. In previous experiments with chimneys built of burned brick four hours was the time used; and comparatively little dye was lost during the four hours, that is, comparing the amount with that

Chimney No.	Mortar	Units	
36	Masonry cement	4 x 8 x 16 Block	
37	Masonry cement	Brick	
38	1:1:6 Lime cement Mortar	Brick	
39	1:1:6 Lime cement mortar	Block	
40	1:1:6 Lime cement mortar	Brick	North wall dry brick East wall damp brick
	Masonry cement	Brick	South wall damp brick West wall dry brick
41	1:1:6 Lime cement mortar Masonry cement	Block	North wall dry block East wall damp block
		Block	South wall damp block West wall dry block

lost with concrete units. In the chimneys built of concrete block units the cores filled rapidly and then the dye worked both ways.

Several experiments led us to believe that suction in concrete units does not have as much affect on bond with mortar as has been believed. We therefore decided to test several concrete units of different aggregate contents in an attempt to determine what effect the moisture content of the units had on bond. We believed this would also give us the effect of suction.

The first test was made with brick-size units as they are usually delivered to the job, that is, well-cured units with normal moisture content. We were surprised at the good results; all of the brick except one averaged over 80 percent bond. There was a difference between the buttered end and the backup, but the difference was not great. All tests were made with solid brick-size units, as we could get better control. As we consider anything over 95 percent good bond, we do not believe wetting is necessary, except in the case of No. 6, which varied much more than other units.

Next we tested bond by dipping the units in water for approximately 5 seconds before laying. These showed practically perfect bond for No. 1 to No. 5, and No. 6 showed 95 percent bond. The difference between buttered and backup was not over 1 percent.

Next we dried the units in an oven for 24 hours and after cooling laid them as before. Even in this case, the bond was not considered poor, except the backup faces of No. 6, which fell just below 50 percent. Here the difference between buttered and backup ends was greater. However, in some cases No. 5 showed no difference.

Figure 2 shows bond between the units and mortar with normal, wetted, and over-dried units.

From the results we deduce that suction does affect bond to a certain extent, but not nearly so much as we have heretofore believed. From these and other experiments, we have reason to believe that moisture that is drawn into the unit is not lost, but reverses direction later and flows back to the mortar to produce better bond. However, if surface capillary action takes place and the water is drawn out on the surface, it evaporates and is lost, a fact which we believe is the cause of much poor bond.

Moreover, if concrete units are laid in hot weather, the moisture that passes into the units is drawn to the surface and is also lost. This was especially noticeable last August during the extremely hot weather. In some cases it was necessary to wet the walls later as the mortar had dried too quickly. We believe that when concrete units are laid in hot weather, it is just as necessary to protect the walls from the hot sun as it is to protect them from freezing in winter.

The graphs do not show that we found a difference in bond between extremely rough ends and comparatively smooth ends. Smooth surfaces give better bond, as we found with burned units; but there is not so much difference in the case of concrete units.

From the results of what we have done, we do not believe the problem of the concrete masonry industry is bond between the units and mortar. In our tests of concrete units for bond, only specimen No. 6 seemed to require wetting, and in this case moistening the surface appeared to improve the bond satisfactorily. The condition might also have been improved by making the surface smoother.

The greatest difficulty experienced with concrete masonry units is known to be due to expansion and shrinkage of the units with the changing of the moisture content and temperature. When walls are built of improperly cured units, unsightly cracks often occur. The ease with which some units absorb water causes dimensional changes and resulting difficulties; this is the problem which should be solved.

Our experiments were made to see if the conclusions we reached regarding clay units applied to concrete units. We have found some of them do apply but not to such a great extent. We trust that our experiments will encourage further research, since our work was not intended to be conclusive.

There may be a good reason why high suction in concrete units does not result in poor bond, as we have always believed. Most of the water drawn from the mortar remains in the wall and may have a tendency to keep the junction of the mortar and the unit wetter than it would be if surface capillarity drew it out of the wall, where it is lost. Again, there may be a better affinity between concrete units and mortar than between burned products and mortar. We are now running further experiments with burned units which may give us the answer to the relation of suction and bond.

While the work we have done is not definitive, it seems to indicate these conclusions:

1. Except with the unusually rough surfaces, suction does not appear to be the problem.

2. Moisture passes through the units. In many sections of the country a surface treatment is used to stop the moisture at the surface. It is the author's belief that a way can be found to reduce moisture penetration into concrete masonry units (including lightweight units), and that it can be done during manufacture. This will not only affect possible leakage, but aid in the dimensional stability of the product in the wall.

3. If further work checks these findings and it is determined that dryer units can be laid to produce satisfactory bond, there will be less shrinkage in walls. This shrinkage after laying appears to the writer, with his present knowledge, to be the most important problem of the industry. More research on shrinkage and expansion of units in the wall is necessary.

The author wishes to acknowledge the assistance given him in conducting these experiments by Edward Kryk of The Detroit Edison Company, William T. Young and Joseph Kauer of the Huron Portland Cement Company, and the Concrete Products Association of Michigan.

"Lifetime" Fencepost Made At Dishman, Wash., Plant

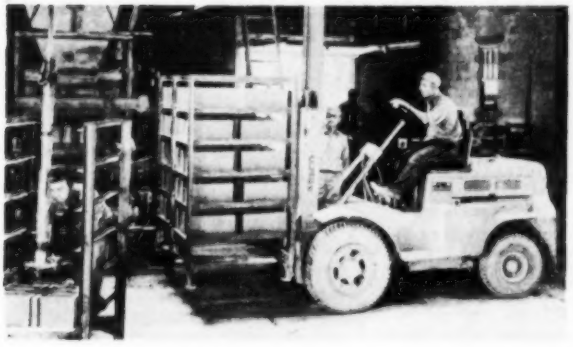
Production of concrete fenceposts began late last year at the plant of the Dishman (Wash.) Concrete Products Company's plant under the first franchise granted by the Permanent Post Corporation. The latter concern was formed in recent months, with J. D. Collier as president. Mr. Collier is the inventor of the new concrete item. He spent nearly three years developing his casting machine, which turns out 900 fenceposts a day.

Permanent posts have two outstanding features—a "joint" which prevents breakage if the post is bumped while it is in the ground, and a steel rod running through it. Each unit is cast in two separate sections; and these are held together by the rod, which is locked to the bottom and bolted on top.

E. J. Schuh Sr., president of the Dishman plant, estimates that he has a $40,000 investment in the casting machine, special equipment, hoppers, and curing rooms.

At Houston, Tex., a new $250,000 Black-Brollier plant is producing concrete pipe with the latest type of automatic equipment, which includes a 67-ft. batching tower, five pipe-making machines, and five curing kilns.

Indiana Block Maker Finds Close Attention to Materials Handling Pays Rich Returns



● At the Seberger Concrete Block Company's plant at Gary, Ind., a fork-lift truck picks up a rack of newly-made block to be carried to the kilns. The machine operator at the left it beginning to load another rack. Two fork trucks are used to avoid jams at the machine.

MATERIALS-handling methods begun 28 years ago are still paying dividends for the Seberger Concrete Block Company of Gary, Ind. The firm manufactures concrete blocks for use in light construction. It was founded 28 years ago by Jake Seberger, who is still the boss. He started making blocks in the basement of his home, but soon moved his operation to a 20- by 20-ft. frame building.

"When we started," Mr. Seberger recalls, "the blocks were handled manually, and a man had to be pretty husky to do a day's work. Materials-handling methods weren't given much thought, and fork-lift trucks were almost unheard of. I knew that some kind of mechanical hauling device would be a necessity for my plant if I expected to increase production substantially, so I kept my eyes open for equipment to take the strain off my men."

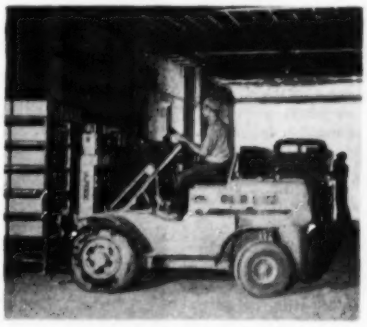
In a few years Mr. Seberger purchased his first piece of materials-handling equipment — a hand-lift platform truck. In another few years he acquired a gas-driven platform truck, and finally he bought a fork-lift truck.

"The fork truck was even more valuable than I had imagined," Mr. Seberger reports. "It eliminated a lot of back-breaking work. It was also more efficient and much faster than manual handling. Almost immediately I found I could increase production without increasing my labor force. The truck paid for itself in a few months."

In the ensuing years the company has made sure that improvement in handling methods has kept pace with plant growth. As production increased, more fork-lift trucks were purchased. Today there are five fork trucks, two of which are used constantly all day long. The other three are used during peak production periods. The new plant, completed two years ago, is made of concrete blocks and has 27,272 sq. ft. of floor space. It is designed to facilitate mechanical handling at all stages of the block-making process.

The company operates two Besser concrete block machines, one with a capacity of 1,000 block per hour, the other producing 1,600 per hour. The smaller machine is the work horse of the plant, being used to make 4-, 6-, 8-, and 12-in. block. The larger machine makes 8-in. units.

When a rack is filled with block, a Clark fork-lift truck carries it to a steam kiln, where the blocks are cured and dried. They are left in the kiln for 12 hours under low pressure at a temperature of around 130 deg. F. When thoroughly dried, the block are carried by Clark truck to storage. While the one fork truck carries the block to and from the kilns, a second truck carries empty racks to the forming machine. This co-ordinated procedure insures a smooth flow of masonry units from the machine to the kilns with no delays waiting for racks.



● A rack of block is moved from the kiln to a storage area for eventual shipment. By storing racks on both sides of the aisle, operators can load a flatbed truck from either side in a short time.

In the 28 years Mr. Seberger has been making concrete block, volume has increased from $6,000 the first year to a gross of over $200,000 last year. Cost-of-business increases during this time have been kept to the minimum, due in large part to the close attention given to materials-handling methods. Studying his operation now, Jake Seberger remembers the early days, when all the heavy lifting and carrying were done manually. "Those fork trucks have certainly made a difference," he says. "In this business, materials-handling tools have become a necessity; so I plan to continue adding new equipment and trying new methods as they're developed. I can't afford not to".

Kentucky, Tennessee Plants Added by Marietta Concrete

Officials of the Marietta Concrete Corporation, Marietta, Ohio, recently announced that the firm will establish its fifth plant at Bowling Green, Ky., and that it had bought the Concrete Manufacturing and Supply Company at Nashville, Tenn. This plant will be known as the Marietta Concrete Corporation of Tennessee.

According to Frank L. Christy, president, the plant, leased from the Bowling Green Concrete Company, is designed to serve the Kentucky-Indiana-Tennessee area which is now supplied by the Marietta plant. It is expected that concrete silos will be in production at Bowling Green early this summer. Marietta has also authorized expansion and modernization of its operations at Charlotte, N. C. Recenly a new research and testing laboratory was opened by the firm in Marietta.

Other branch plants are operated by the corporation in Baltimore, Md., and Hollywood, Fla. Products include concrete silos and such items as concrete precast beams and columns.

Lock Joint Pipe Co. Buys Great Lakes Concrete Pipe Co.

The Great Lakes Concrete Pipe Company, Inc., Buffalo, N. Y., has been sold to the Lock Joint Pipe Company of East Orange, N. J., according to H. S. Howe, a vice-president of the New Jersey concern.

The Buffalo plant, together with a new plant being built by the New Jersey company at Henrietta, south of Rochester, N. Y., will be operated as a wholly-owned subsidiary of the Lock Joint Pipe Co. It will retain its present name.

Compressed Air Aids Production In Manufacturing Concrete Block

MOST modern concrete block plants make extensive use of compressed air to keep facilities in continuous production, and to maintain maximum output at all times. The range of uses is far more varied than might be apparent from casual inspection. In addition to its employment for the operation of off-bearing equipment, which is today almost universally air powered, compressed air is being widely used for such diverse purposes as cubing, operating bin gates, encouraging the free flow of cement from bins and hoppers, running air hammers and automatic oiling systems, and cleaning electric motors, panels, pallets, lift trucks and machinery in general.

Perhaps typical in respect to the use of compressed air is the plant of Hazard Concrete Products, Inc., at San Diego, Calif.* Air from the plant lines, reduced to pressures of about 3 p.s.i., keeps the cement conveying system unclogged. Four air jets located at the bottom of the storage tank aerate the cement and make it fluent, so that it will flow freely when the gate is open, and along each screw conveyor there are three jets to keep the cement moving. There is also one jet at the elevator dump. The regular 150-bbl. tank is filled with cement daily, while the 250-bbl. reserve tank, which is used to supply evening operations, is filled once a week.

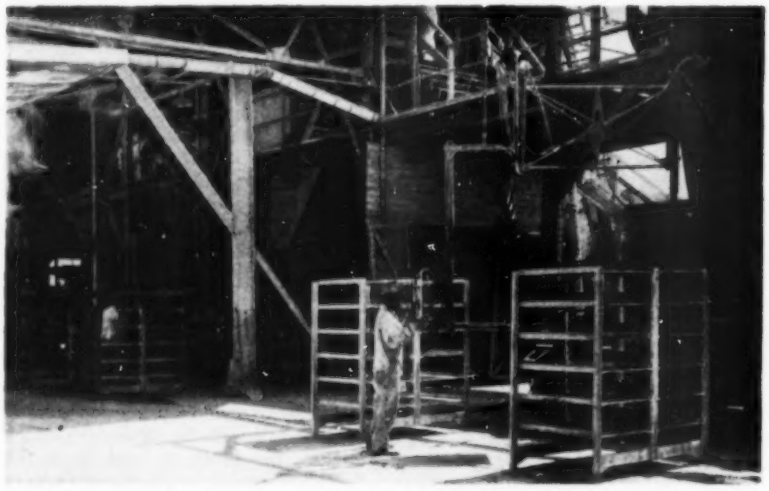
Precautions are taken to have dry air for this purpose. Water traps located at frequent intervals along the lines are unfailingly drained before cement movement is started.

Plant shutdown would be costly to a concrete block maker under almost any circumstances, but especially so in the case of Hazard Concrete Products. This company is one of the principal suppliers in what is generally considered to be the fastest growing big city in America. Building in San Diego has been going on at a pace unanticipated when the plant was built. To keep abreast of the demand for its products, the company maintains a rigid equipment cleaning and lubrication program.

Each of the three block-making machines formerly was greased by hand every 8 hours, which took almost an hour for the entire job. Automatic mist oilers have since been installed to do a continuous and much better job of lubrication. The mist is obtained by applying air pressure on the heating tank for the oil. Frequent replacements of pins and bearings have been eliminated by thus improving lubrication.

Penetrating dust is blown by reduced air pressure every day from all electric panels to reduce arcing and replacement. Motors and machinery are cleaned thoroughly and regularly by compressed air to keep

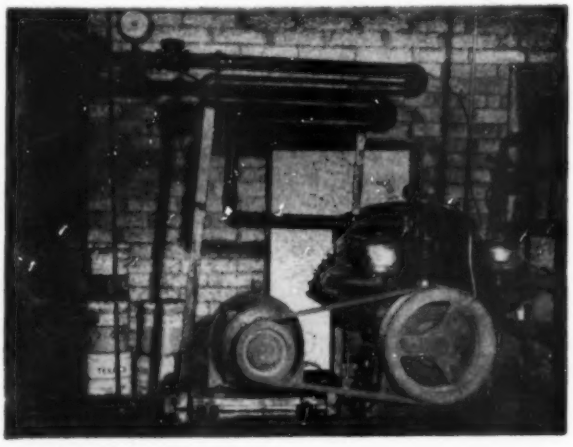
(*Continued on page* 257)



● Three concrete block machines of Hazard Concrete Products, Inc., are seen here. Compressed air speeds operations in several ways, the most obvious one in this picture being the air hoists used at the machines.

*Photo and data by courtesy of Compressed Air and Gas Institute.

● Left: Cleaning machines, motors, and electric panels are some of the uses for air hoses at this block-making plant.



● Right: This two-stage, three-cylinder air compressor supplies the principal requirements for compressed air.

Here Lies A Going Concern—
It Died With the Owner

Could your widow carry on your business in case of your death? What would happen to your family?

Will your estate consist largely of your business? Are there ways in which you can protect your estate?

By HAROLD J. ASHE

FEW people, except the morbidly inclined, liked to dwell upon the inevitability of death. Yet, one of the unpleasant duties of every operator in the concrete industries is the necessity of contemplating the fate of his business when he dies. And this, in turn, is closely associated with a personal consideration of what will happen to his wife when death terminates his management tenure.

Just what will happen to your business when you die? Do you really know? Can you make a shrewd guess, based on a knowledge of the probabilities and the experience of others? While this may be the final management problem confronting a business, and the first to face a woefully unprepared and mourning widow, common sense dictates the problem be met and, if possible, solved well in advance of death. Death, for each of us, is no respector of mortality tables. The young plant owner, no less than the older one, needs to give this subject high priority now.

All too often a prosperous business virtually dies with its owner. The longer a businessman continues in business, the more likely he is to fall into the error of thinking of his business and its value as just like money in the bank, or the possession of stocks and bonds. Yet, the simple fact of the matter is that his business as a "going" venture is a very personal thing. Its ability to make a profit, instead of showing a loss, is inextricably linked up with the owner's personality, his know-how, and his management skills.

Even though, as a thriving business, a plant may, under certain conditions, be sold at a substantial profit and with money changing hands for good will, this prospect quickly diminishes with the death of the owner. Hence, it is not safe for an owner to assume that the attractive offer he once turned down represents the price his wife can command after his death.

If a plant operator is the sole proprietor, manager, and driving force in his business, it is in a peculiarly vulnerable position upon his death. Not only has such a business lost the personal services of its guiding hand, but a substantial part of the earnings of the business are traceable to these personal services. Thanks to many years of filing individual income tax returns, too many business owners have been "educated" to think of their business net earnings as a return solely on their capital investment. As sole owners of unincorporated businesses, they forget that a large part, sometimes a major share, of business earnings are really salary payment for the personal services of ownership.

Thus the owner of a business which is earning, say, $15,000 a year for him and his family errs seriously if he assumes that anything approaching such earnings will be available to his family upon his death. With his demise, an owner's personal services must be substituted by hired help. Even if this hired management is as competent as the late owner, this salary charge will sharply cut net earnings of the business available to the widow or other heirs.

If, however, to avoid this charge against the business, the widow attempts to manage the venture, it is under a severe handicap. Few widows, except those who have been active in the business management, are equal to the task. Within months the business may be hopelessly insolvent.

This plight of a widow who is heir to a business she cannot continue originates long before the death of her husband. It is inherent in the nature of small, unincorporated businesses, and even of many closely-held family corporations. Therefore, it calls for long-range planning to find a solution before death.

Because of the peculiar circumstances already outlined, a businessman who is operating a business, whatever its size, which is virtually a one-man management concern, is under moral obligation to revise and modify his thinking in terms of his prospective estate. He should consider every possible method by which his business may be continued after his death. If these devices are closed to him, he should then concentrate, so far as possible, in building an estate outside of his business which will assure his wife a decent living after his death. The nature of small business makes such planning imperative.

Regardless of the book value of his business, an owner should constantly remind himself that its worth will drop drastically upon his death, unless a workable, legal method is found to continue it. Even then, earnings will probably fall because of demands of hired

● Could your widow carry on your business?

management or the introduction of a managing partner.

In contemplation of death, a sole owner may incorporate his business and take in a reliable employee by selling him a small block of stock, and offering an opportunity gradually to buy more stock as time goes on. It is a characteristic of many smaller business ventures that they provide no future for anyone except their owners. As a result, the most competent employees with latent management skills drift away after a few barren years. Such a far-sighted step can also have immediate favorable effects on the business in that the most competent employee is given an incentive to exert himself. Net cost of getting such assistance may be negligible. Salary increases may be moderate, yet still attractive to an ambitious employee given a chance to participate in ownership through buying a block of stock. Secondly, the cost will be reduced because of income taxation.

Again, if for legal reasons incorporating is not desirable, an owner may develop a promising employee to the point where he can be offered a partnership interest with a view assuring that the business will have skillful, interested management after the founder's death. Even if it is contemplated that the business will eventually be sold after the demise of the founder, good management can conserve assets and ultimately assure a better price for the estate of the deceased.

A good many business ventures have been kept going for generations by introducing sons and grandsons into the business as partners. This occurs as rapidly as such offspring demonstrate ability and long before the death of senior firm members. Of course, there is always the possibility they will show no capacity for business whatsoever, and such a partnership would solve nothing. On the other hand, a good many sons are denied any partnership claims for so many years that, if they have the kind of stuff the business is some day going to need, they strike out on their own. Making such a partnership too difficult to attain can be as disastrous as making it too easy.

If none of the foreging steps is possible, it may be best to become reconciled to the fact the business, upon the death of the owner, may be sold at considerable loss. As a going concern, a business can drop in value very rapidly, once the guiding hand is removed from the throttle. This is particularly true if the widow, without experience in business, tries to keep it going and is at the mercy of indifferent employees. The sooner such a venture is liquidated, the smaller will be the loss.

In anticipation of such a situation, an owner might better be advised to try to develop outside sources of income which can pass intact to the widow. Granted that a businessman wants to expand, expansion is only a means to an end and is not an end in itself. It can be most imprudent—in terms of building an estate — to put all funds into the business, if there is no one to carry on that business in the event of the owner's death. In fact, the business itself is in jeopardy by such concentration.

Thus, an owner, mindful of his solemn obligations to his widow and perhaps dependent children, should give some thought to diversifying his holdings. An extra $5,000 invested to pay off a mortgaged home may be a better investment, estate-wise, than a like amount plowed back into an already well-financed business.

A substantial life insurance policy should be a must. Young business owners especially should protect their families with as much life insurance as possible. The quick cash which such insurance provides will make it possible for the widow to avoid immediate hardship. It will give her funds with which to carry on while trying to dispose of the business to the best advantage. Many a business has been sold at a greater sacrifice than would otherwise have been necessary because of lack of funds for the immediate, pressing personal needs of survivors.

An unmortgaged rental property may not earn as much, dollar for dollar of investment, as having the same amount of money straddling two or three properties heavily mortgaged. However, the former will provide a widow with at least a minimum assured income, uncomplicated by the worries of mortgage payments and possible foreclosure.

In anticipation of death, no matter how remote it may seem, there is no substitute for cash. Often death is preceded by a long-drawn-out illness with attendant heavy expenditures. If cash or quick assets are not available, a business may become heavily mortgaged to defray hospital and medical bills. Moreover, if the estate is substantial, the impact of estate taxes should be anticipated and prepared for. Otherwise many sacrifices may be made to satisfy the Federal Government's claim on the estate, a claim which takes priority over all others.

One attorney having wide experience in estate problems characterized the thinking of businessmen thus: "Every one of them manages his affairs on the egotistical assumption that he has a contract with his Maker for the Biblical three score and ten years of life." Then, as an afterthought, he added that "when they reach 70 some of them behave as though they'd just negotiated a ten-year renewal".

Almost invariably, he explained, the estates that men plan for sharply depreciate when the final accounting is made. Usually this is because there has not been enough real planning, and enough anticipating of eventualities that could have been foreseen. A man's net worth, too often, is dependent upon his continuing to live. That is, he has made too many commitments based upon living and too few with the pessimistic belief he may die tomorrow, or, at the latest, next week.

Holdings are heavily mortgaged, sometimes right down to personal property, and with payments constantly coming due. Demand notes are too casually given. Accounts payable are allowed to get out of line and ready cash is at a bare minimum. Then, when death strikes suddenly, a substantial part of the estate must be sacrificed to satisfy creditors and to salvage other holdings. All too often no provision has been made to meet federal and state demands for death taxes.

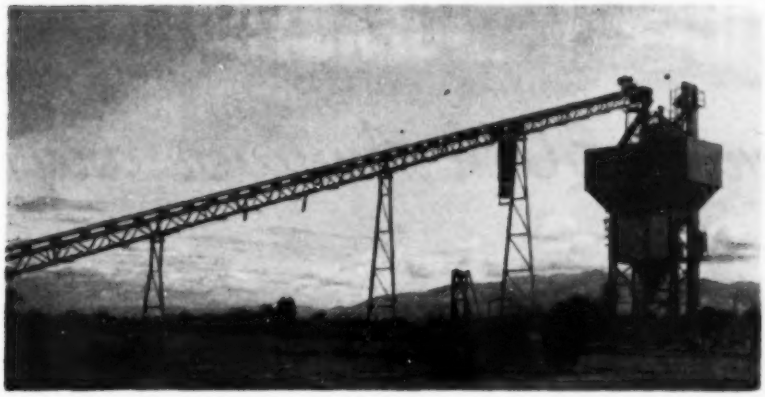
It is an unhappy fact, attested to times without number in probate court proceedings, that too many businessmen who know how to plan to live are abysmally ignorant in knowing how to plan their affairs against the eventuality of death. In this failure to plan against death, it is the innocent survivors who suffer.

Pre-Shrunk Masonry Plant Reopened after Three Years

New equipment installed at the Pre-Shrunk Masonry Sales Corporation's plant in Roanoke, Va., after a lapse of operation for more than three years, permitted the resumption of production. This large plant, producing cinder block, was forced to close in July, 1950, after a 10-car-capacity hopper fell through the roof from a 100-ft. tower, killing one of the workers. The accident, which occurred while the plant was being renovated, rendered most of the machinery useless.

Initial capacity of the new plant, according to M. W. Ferguson, owner, will be 18,000 units each 24-hour period, with a gradual increase later. Prior to the tragic mishap in 1950 the capacity of the plant was 24,000 blocks per 24-hour period. Pre-Shrunk Masonry Sales Corp. was established by Mr. Ferguson in Roanoke in 1926.

San Jose R.M.C. Plant Operates Own Bulk Cement Hauling Fleet



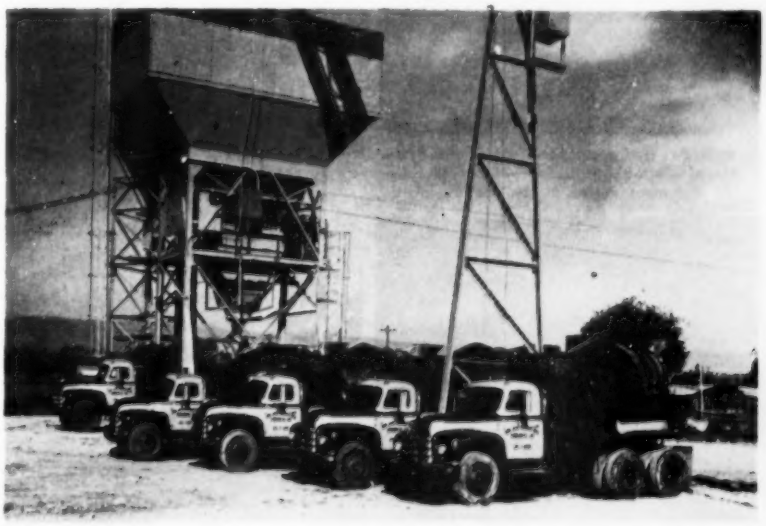
• The new $300,000 plant of the San Jose Transit Mix Concrete Company at San Jose, Calif. The aggregates conveyor is 212 ft. long.

MOST recent entrant in the ready-mix industry in the California "prune belt" is the San Jose Transit Mix Concrete Company, whose $300,000 plant located on the superhighway skirting the city of San Jose went into operation in March, 1953.

Prime mover behind establishment of the new facilities was Al Bosque, general manager, whose fleet of 60-ft. trucks and trailers formerly was engaged in hauling cement and aggregates for other batch plants in the Santa Clara Valley. Other owner-members of the firm are Walter Kummert and Nathan Kessler.

Aggregates are received in a 50-ton underground bin and carried up to the 4-compartment 240-ton plant bin by a 24-in. by 212-ft. conveyor. The conveyor and the Model CA 244 batch plant were supplied by the Noble Company, Oakland, Calif. Controls are fully automatic, gates being air-ram operated. Batching capacity of the plant is about 140 cu. yd. per hr. The cement silo has 2,000 cu. ft. of storage capacity.

Twelve Jaeger truck-mixers on Diamond T Model 620 chassis handle the mixing and delivery. Aggregates are purchased from the Eliot plant of Pacific Coast Aggregates, Inc., San Francisco.



• Right: Five of the 12 truck-mixer units, all of which are 1953 models.

• Below: Company-owned bulk-cement hauling equipment employs the latest type of covered hopper trailers.

N.R.M.C.A. Members Urged To Enroll in Safety Contest

Vincent P. Ahearn has announced for the National Ready Mixed Concrete Association that forms have been distributed for the use of companies enrolling in the current ready-mixed concrete safety contest, which ends on June 30, 1954. All member-companies are invited to enter their plants in the competition.

Trophies will be presented by PIT AND QUARRY at the 25th annual convention of the association in Miami next January to winning member companies in three classifications: those producing less than 50,000 cubic yards in the 12-month period; those producing from 50,000 to 100,000 cubic yards; and those producing more than 100,000 cubic yards.

BLOCK MACHINE MANUFACTURER

Observes 50th Anniversary

● Jesse H. Besser, president of the Besser Manufacturing Co., has unquestionably been the dominant factor in the firm's growth.

AT ALPENA, Michigan, on the 21st of this month the Besser Manufacturing Co. will celebrate 50 years of designing, developing and building machinery for the production of concrete block. The occasion is a significant one because the company and its machines have been such important factors in the growth of the block industry to a position of prominence in the building field.

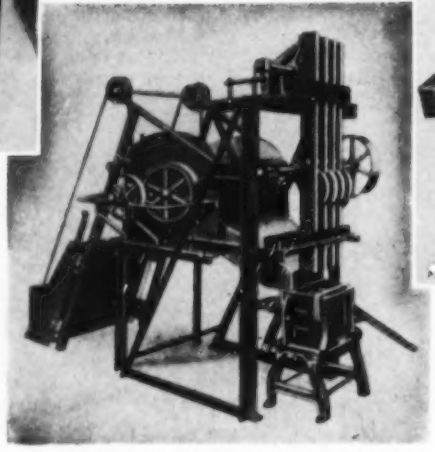
Since the achievements of the Besser Company are primarily part of the long history of man's gradual mastery of mechanism, it seems fitting to commemorate the organization's 50 years of equipment development by turning the spotlight on certain models of the block machines themselves. Accordingly, we have reproduced on these pages six photographs which pretty well show the major steps in the development of Besser units from the first

● Above: The original hand-tamp machine had vertical cores and collapsible sides opening downward to permit the block to be removed. Output: about 200 block per day.

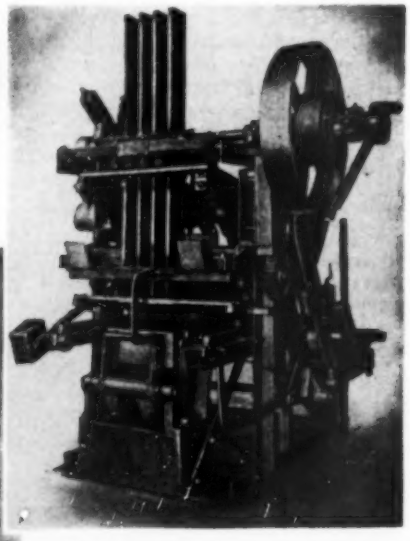
1904

1909

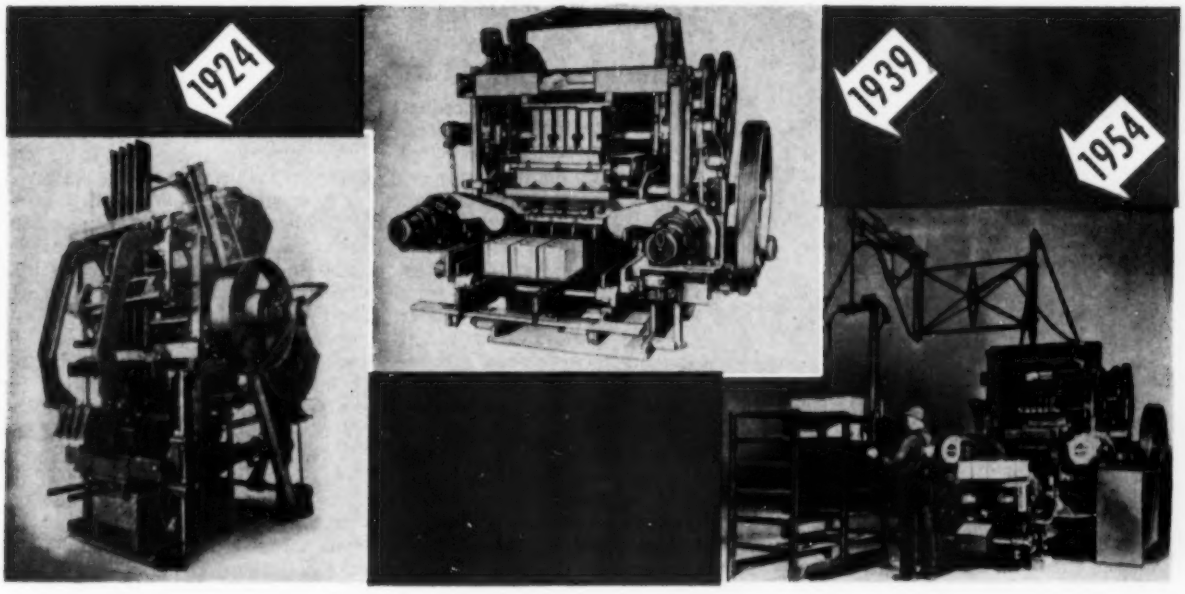
1914



● Right: This face-down 3-core machine permitted putting finer facing onto the face plate of the machine, adding coarser material to fill the mold: Output: 600 block per day.



● Above: An important stage in the development of Besser equipment was this automatic face-down single-block machine. Output: 1800 block per day.



● The automatic plain pallet stripper tamper which appeared in 1924 eliminated the use of cored pallets, thus for the first time making it possible to produce all sizes and shapes of block on the same set of plain pallets. Output: 3000 block per day.

● The 1939 model pictured above marked the first appearance of the Vibrapac machine, incorporating the principle of vibration under pressure and eliminating the use of tampers. Output: 5000 block per day.

● Although the Vibrapac machine being manufactured today bears a very close resemblance to the original 1939 machine, many basic improvements have been introduced during the intervening years, and output has soared to 10,000 block per day.

rather crude hand-tamp model introduced in 1904 to the fully-automatic high-production machine being manufactured today.

The earliest models will surely evoke a nostalgic twinge among many of the block industry's old timers, while the younger generation may look askance at machines which took a day or more to produce the same number of block that erupt from their modern counterparts in approximately 30 minutes.

The first machine in the picture sequence is a hand-tamp model (1904) which had vertical cores and collapsible sides opening downward to permit removal of the block. In front of the machine are the tamping tool and two of the cored cast-iron pallets on which the block were made. Production was about 200 block per 10-hr. day.

In 1909 the face-down 3-core machine was introduced. This model permitted placing fine material on the face plate of the machine before introducing coarse material and tamping between and above the cores. The capacity of this machine was about 600 units per 10-hr. day.

The next important development came in 1914 with the appearance of the automatic face-down machine which had a capacity of 1,800 block per day. Although this model, like its predecessors, required the use of plain wood pallets, it was one of the first truly automatic machines in the field, and it paved the way for important developments in the years ahead.

The automatic plain pallet stripper tamper offered to the industry in 1924 represented a tremendous forward stride. Since the cores were suspended from above the mold, there was no necessity for having holes in the pallets, and thus it became possible for the first time to make all sizes and shapes of block on one set of plain pallets. With this machine productive capacity jumped to 3000 units per day. It was the first cam-operated model, and it produced block continuously without the use of hand levers of any kind.

The plain pallet stripper tamper spanned the 15-year period from 1924 to 1939, although a number of basic improvements were made. Perhaps the most significant of these was the series of changes which made possible the production of the fully pressed top concrete unit.

The next profound change came in 1939 when the plain pallet stripper made its first appearance as a vibration machine, a development which touched off a veritable chain reaction of improvements affecting block quality, productive capacity, convenience and costs. The capacity of this first Vibrapac machine was 5,000 units per day.

An impressive number of basic improvements have been made during the years since the Vibrapac made its debut. Electric control of height and density was introduced during this period, the front pallet feed arrangement made its first appearance, and magnetic pick-up was successfully adapted to the handling of empty pallets. Productive capacity also advanced steadily—first to 6,000 units, then 7,500, and finally, for the machines being delivered in 1954, reaching the astonishing peak of 10,000 8-in. equivalents per day with the standard 18½- by 26-in. pallet.

As a result of the steady increases achieved in machine productivity by Besser and other equipment manufacturers, output per man in the block industry has actually increased in the ratio of about 50 to 1. It is perhaps just a coincidence that this ratio and the age of the Besser company exactly correspond, but the coincidence is surely a happy one, as is the occasion for the golden anniversary celebration itself. We know that the entire block industry will share our hope that 50 years from now another generation of editors may note a similar coincidence in commenting on the company's attainment of the century mark.

Dateline - 2000 A. D.

ONE of the more unusual kinds of experiments, a type which is of great interest to those engaged in producing concrete and/or concrete products, is being conducted by the Portland Cement Association at 13 locations in the United States.

According to P.C.A.'s booklet *Dateline: 2000 A.D.*, the researchers of the association call it their Long-Time Study of Cement Performance in Concrete and refer to the sites of the experiments as field exposure plots and field projects. It all began in 1940, when the member companies of P.C.A. determined to finance a comprehensive field and laboratory study of cement performance in concrete. Twelve able research engineers and scientists were invited to supervise the study — four from the portland cement industry and eight from leading public and private engineering and construction agencies in the United States and Canada.

The first phase of the study, now completed, consisted of obtaining 27 test cements covering the widest possible range of physical and chemical properties and methods of manufacture and representing geographically the principal cement-producing areas of the United States. These cements were carefully observed as to manufacturing detail and were subjected to many physical and chemical tests to determine all properties which might influence their performance in the concrete to be used in the study.

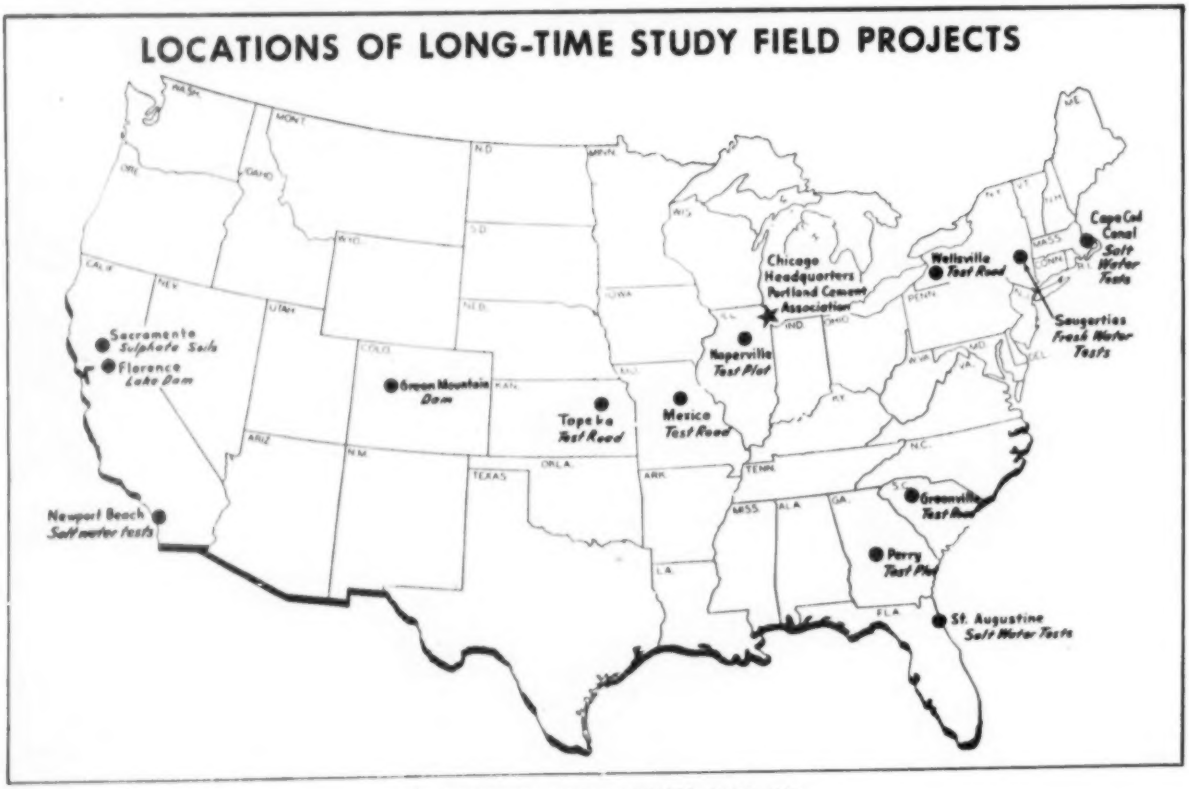
In the second phase, now under way, concrete specimens in which the test cements were used are being subjected to the widest ranges of attack from the forces of nature in various parts of the United States. Samples are subjected to snow and ice, rain and sun, warm and cold salt water, sulphate soils, chemicals, and freezing-and-thawing cycles.

The third phase will be the most significant one, for it will co-ordinate the information obtained from the first two phases and, through further field examination and laboratory analysis, point the way to more durable, stronger, and more economical concrete.

● A map showing the 13 points in the United States at which the Portland Cement Association is carrying on research projects for its long-time study of cement performance in concrete.

Four test pavements totaling about 13 miles of two-lane concrete highway constitute the largest of the projects. Purpose of the research is to set up a comparison of the performance of concrete pavement constructed in a wide range of climates. The test pavements are located in Missouri, South Carolina, New York, and Kansas. To date, say P.C.A. researchers, the most significant result of the Long-Time Study has been the demonstrated value of air entrainment. Through tests on New York state slabs averaging 12½ years in age it has been established that surface scaling caused by the application of salts (to melt ice) has not appeared on those made with air-entraining cement, although half of the slabs made with non-air-entraining cement showed scaling. As a result of these and other tests 29 states now specify air-entrained concrete for all new concrete highways, and 11 other states have made provision for its use.

In arid regions of the United States soluble mineral salts in the soil often cause damage to the most durable structural materials. Near Sacramento, Calif., in an investigation begun by P.C.A. in 1952, con-



● Not winter and summer scenes in cemeteries. Above: Concrete boxes and posts being tested at the P.C.A. "farm" near Perry, Ga.

Left: Similar items take on a slightly different appearance under the snow at the Naperville, Ill., plot.

crete beams—1,000 of them—are being exposed to sulphate soils to determine the durability of different concretes in so-called "alkali soils". These beams, made with lean, medium, and rich concrete mixtures containing each of the 27 test cements, were immersed in tanks containing natural alkaline soils of the region, which are very high in sodium sulphate. One tank contained Epsom salts in addition, making a solution with a high magnesium sulphate content. Ten years after the experiment was begun, it was found that the more cement used in the concrete mixture the better the resistance of the concrete; and that air entrainment improved the resistance of nearly all the concretes to attacks of the sulphate soils.

Two of the most publicized of the experimental sites are the "farms" at Naperville, Ill., and Perry, Ga., which constitute the master project of the Long-Time Study. Purpose of the experiments at the two proving grounds was to make a comparison of the performance of concrete test structures (pavements, retaining walls, and piling) exposed to the natural weathering conditions in cold and warm climates. At Naperville tests are bringing out clearly the advantages of air-entrained cement in concrete subjected to conditions of severe exposure. Durability was found to be definitely improved by air entraining. There were also demonstrations of the greater durability or rich versus lean and stiff versus watery concrete mixtures; and test specimens showed the advantages of sound versus unsound aggregate and the importance of proper placing and curing of concrete.

Then there are the tests of concrete piles submerged in water. In these experiments the scientists are seeking to work out a comparison of the performance of concrete exposed to fresh and sea water in cold and warm climates. After ten years of exposure at such widely differing climatic points as Cape Cod, Mass., Los Angeles, the Hudson River, and St. Augustine, Fla., the concrete piles showed the importance of air entrainment and richness of the concrete mixture in obtaining maximum durability.

For experiments termed "the toughest tests of all", 81 sections of walkways were built at Florence Lake Dam in the High Sierras and a part of a concrete parapet wall constructed at Green Mountain Dam in the Rockies. At these locations the 27 test cements are being subjected to the most rigorous climatic tests of the study, for temperatures are well below the zero mark for many days in the winter. Cycles of freezing and thawing are many and severe; fluctuations in temperatures are wide and rapid; and elevations are from 7,300 to 8,000 ft. above sea level. These experiments are being run to establish a comparison of the performance of thin concrete sections exposed to severe frost action and weathering. As in the case of the other types of tests, it appears that air entrainment is of value in producing concrete which is highly resistant to freezing and thawing.

In order to interpret the results of the field tests so that information gained from them can be applied to further increase the durability, strength, and economy of all types of concrete construction, the staff of the P.C.A. laboratory at Skokie, Ill., is now hard at work. While the field projects are designed to bring out differences that might exist in the performance of the concrete specimens used in the various projects, the laboratory phases of the study provide the *reasons* for such differences in performance and the means by which this knowledge may be used in providing progressively superior concrete structures. With the facilities of this up-to-the-minute laboratory, scientists are now co-ordinating the results of the Long-Time Study. More than 24,000 hermetically sealed drums of the cement and aggregates used in the study have been stored for future reference at the laboratory. Thus, it will be possible for scientists to examine samples of the specific cement and aggregate used in a given specimen 100 or more years from now.

Most of the projects used in the study were constructed in 1941 and 1942, and the tests will continue "until Nature completes them". The study has no dateline, since the final answer may not be written for 50 years; hence, the title of the booklet —*Dateline: 2000 A.D.*

The sale of the Williston (N. D.) Concrete Products Company to F. J. Butler and associates of Fargo, N. D., was announced recently. The former owners—Robert LeSuer, Russell Bartels, and Harry Hieb—will continue the management of the business, which will be known as the Williston Builders Supply Corp.

BESSER GOLDEN JUBILEE...

BESSER started here ◀ making concrete block machines like this ▶

***Progress* from 1904 to 1954**

has developed this modern BESSER Plant ▼

The Concrete Block Industry and Besser have advanced far during these 50 years of teamwork in concrete block engineering and production. Starting in 1904, Besser led the industry as it "became of age" and reached a production record of 600-million block in 1925. Sound progress continued and by 1953 the Industry's production totalled almost 2-billion units. The present trend indicates increases to 6-billion-block annual production in the near future. For years to come, prospects for progress look *good!*

Herman Besser, Founder of
Besser Manufacturing Company

In this year of BESSER'S GOLDEN ANNIVERSARY, over 800 people work in this plant

Today BESSER is the world's leading manufacturer of concrete block machinery

In the Besser files is a letter written Jan. 18, 1924, by a typical two-machine Besser plant operator, predicting *then* that "we are only at the beginning of a great demand for concrete block". How *right* he was . . . and today you can say *that* again, with still more emphasis! Architects, contractors, realtors, building and home owners at all levels have responded to Besser leadership. More and more Besser-made concrete block are being used for exteriors and interiors of all types of buildings and homes.

Jesse H. Besser, son of
Founder, and President

Constructive cooperation has won genuine respect for concrete block masonry!

Besser Vibrapac block-making techniques . . . speedy automatic mass-production machines . . . continuous scientific research . . . modular sizes . . . modern ashler pattern units . . . colorful split-block beauty and many other outstanding Besser developments have gained universal acceptance for concrete masonry. Besser thanks you . . . and pledges continued development in automatic concrete block machinery to match your advance through the future.

. . . a Half Century of Concrete Masonry Progress

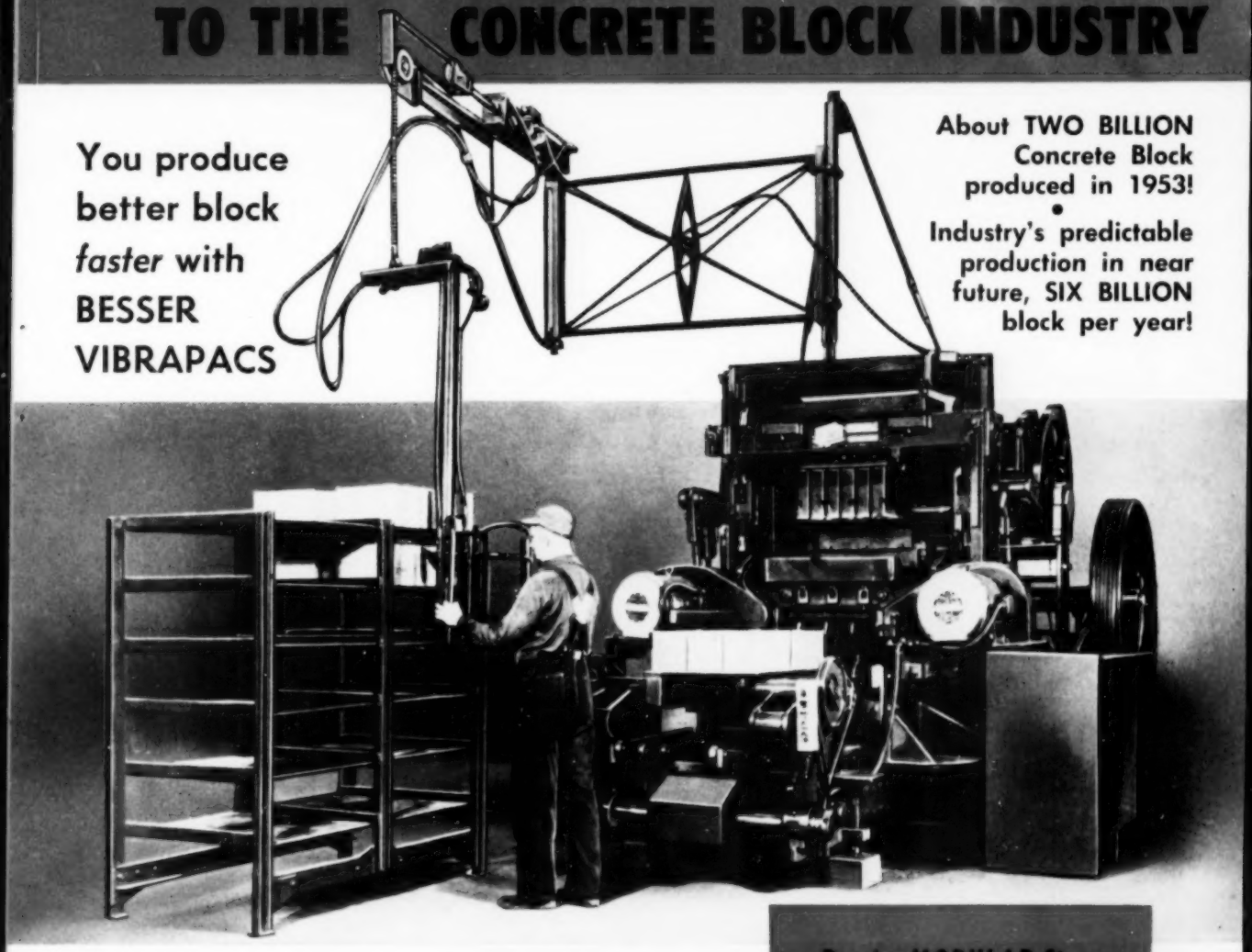
50 YEARS OF COOPERATIVE SERVICE TO THE CONCRETE BLOCK INDUSTRY

You produce better block *faster* with BESSER VIBRAPACS

About TWO BILLION Concrete Block produced in 1953!

•

Industry's predictable production in near future, SIX BILLION block per year!



Your future looks better with BESSER

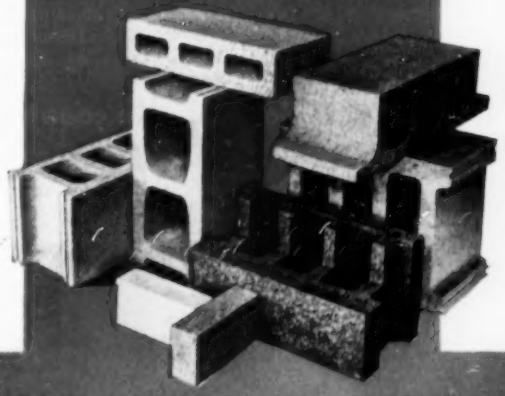
Many letters from operators of Besser-equipped plants have recorded genuine satisfaction with Besser machines. Letters like this one, for instance: **"I have inspected hundreds of plants and am familiar with all makes of concrete block machinery. I have found nothing that can equal BESSERS for quality and quantity production".**

Similar letters through the years have expressed approval: **"Besser Vibrapacs give us maximum production at low operating cost" . . . "We never have any downtime, now that we have Vibrapacs" . . . "Our experience with Vibrapacs is very gratifying — we are making money" . . . "We firmly believe Besser Concrete Block Equipment is still the finest available" . . . "The Vibrapac is the only money-maker in the concrete block business" . . . "Besser equipment is dependable and has given us full satisfaction".** That just about sums up the reasons for the growth of Besser-equipped plants through a half century of concrete masonry progress.

Today your markets are greater than ever before for the many styles and sizes of concrete masonry units you can make on BESSER Vibrapacs, using ONE SET of PLAIN PALLETS. Greater power, smoothness and ruggedness, and more profitable productive capacity have been engineered into BESSER equipment. Get on the "Besser Team" and win!

Popular MODULAR Sizes

Besser Modular Concrete Block in all sizes and shapes (including modern Soffit block for floors and roofs) can be made on the BESSER Vibrapac . . . faster, better, automatically, at low cost! Modular sizes are welcomed by architects and builders. Practical for you, too, in production and selling. Complete details on request.



BESSER MANUFACTURING COMPANY • Alpena, Michigan, U. S. A.

Announcing the POWRWORKER "26"

FEATURE BY FEATURE, IT'S ENGINEERED TO MEET YOUR OWN HANDLING REQUIREMENTS

Detailed job-studies in customer plants, warehouses and terminals dictated the features of the POWRWORKER "26". No truck on the market today can match the POWRWORKER'S combination of *user-benefits:*

- **Maximum Maneuverability** — Only 26" longer than the load, the shortest standard truck on the market.
- **Light Weight**—Completely fabricated construction combines maximum strength with least weight.
- **Stability**—Close-to-the-floor, low center of gravity.
- **Great Efficiency**—Double reduction of spur gears gives maximum ton-miles at least power cost.
- **Balanced Load Distribution**—Double lift cylinders for smooth lifting and lowering.
- **Safety**—Deadman switch cuts power when brake is applied, handle automatically returns to brake-position.
- **Easy to Service**—All operating units accessible without lifting or dismantling. Drive wheel tire is quickly demountable.

Pallet: 4000, 6000 lbs. cap.

Platform: 4000, 6000 lbs. cap

Stacker: 1500, 2000, 2500, 3000 lbs. cap.

We invite you to compare the 1954 POWRWORKER with any truck on the market! For details, call your local Clark dealer, listed in the Yellow Pages. Or send the coupon for literature.

Ask your Clark dealer about Clark's low-cost Pay-As-You-Go leasing plan.

CLARK EQUIPMENT POWRWORKER SECTION
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☐ Have representative call.

Name_____

Firm Name_____

Street_____

City_____ Zone____ State_____

New Literature

Summer Need! Salt tablet dispensers, both permanent and throw-away types, and salt and combination tablets of various types are described in this *Mine Safety Appliances* literature. Keep the help happy!

Out Identification No. 101

Truck Cranes. The new *Quick-Way* line of truck shovels is described in this literature. Model 12 is a ½-yd. shovel, 10-ton crane; model E2, a 4/10-yd. shovel, 7½-ton crane; S2, 1/3-yd. shovel, 5-ton crane; model J2, ¼-yd. shovel, 3-ton crane.

Our Identification No. 102

Truck Mixer. Eas-E-Drive front end design is featured in the M-310 single passenger, cab-beside-engine truck described in this *Challenge* literature. Weight breakdown for front and rear axles and mixer data are given.

Our Identification No. 103

Better Concrete Faster. How the addition of calcium chloride to the mix results in better, faster and more economical concrete construction is told concisely in this pocket-size *Dow Chemical* booklet. Increased workability, faster set, greater strength, uniform curing and speed in cold weather are among the results obtained.

Our Identification No. 104

Make Your Own wall panel forms in steel frames supplied by *Symons* and described in this brochure. Symons will furnish precision made plywood panels forms in the frames, if you prefer.

Our Identification No. 105

Concrete Columns. Fibre concrete forms for one-time use that can be sawed to desired lengths are described in this *Sonotube* folder. They come in 31 sizes, 1 to 36-in. internal diameter, up to 24-ft. long, longer on special order.

Our Identification No. 106

Block Handling. This job study shows how handling problems pyramided when a block plant grew from 4½ to 18 acres in size, from 2,000 block a day to 14,400. When *Towmotor* fork lift trucks were put to work, handling costs dropped 83½ percent.

Our Identification No. 107

Batching Bins. Weigh batchers in four models, for 500 and 1,000 lb. batches, feature the *Cimco* Twin Bin line. They weigh 1,500 and 2,000 lb. respectively and come with hopper scales, with or without wheels.

Our Identification No. 108

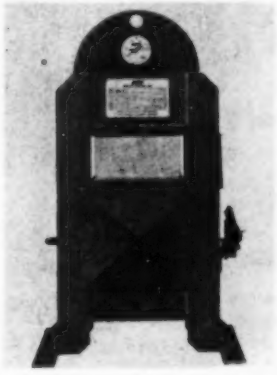
Straddle Carriers. Precast beams, joists, lintels and other such items can be handled easily by the famous *Ross* straddle carriers, built in a wide range of sizes and capacities.

Our Identification No. 109

New Machinery and Supplies

● Compression Tester

Priced to suit the average block and ready-mix plant, a new compression tester for concrete has been announced by *Forney's Inc.* The model QC-125 will test both 8x16-in. block and 6x12-in. cylinders. It has a capacity up to 125 tons, and



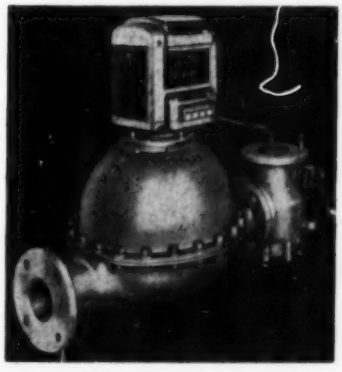
incorporates many features stemming from Forney's long experience in compression testing machinery.

Ease of operation and maximum protection from fragments highlight the QC-125. A comprehensive 8x12-in. aluminum conversion chart beneath the pressure gage converts tons of platen pressure to actual psi of the specimen at a glance. A special pressure gage remains at the exact point of failure until reset by hand. A snubber valve in the gage line prevents damage should the specimen burst during the test. The tester stands 65-in. high, is 37 wide and 31 deep. Shipping weight is around 1240 lb.

Our Identification No. 110

● Automatic Water Meter

Accurate automatic control of water in ready-mix and block batches is promised with a new 3-in. *Neptune* Auto-Stop meter for water delivery up to 300 gpm. It features a cushioned stop that slows down the rapid flow an instant before it trips shut, permitting accurate cut-off with no water hammer. Push buttons "set" the automatic tripping mechanism. Large numerals on the face of the meter record the flow and provide a visual check. An emergency cut-off button can



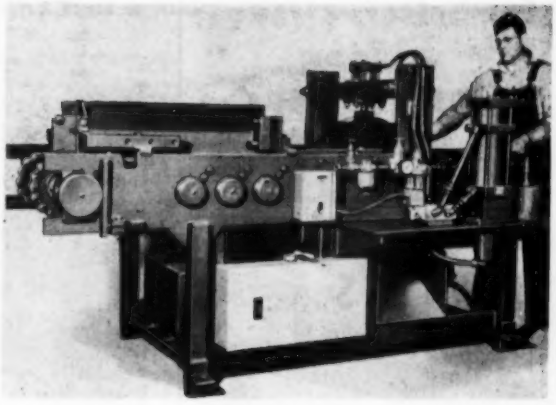
stop flow instantly without affecting the meter reading or Auto-Stop setting. Rugged and simple in design, weatherproof and corrosion-resistant, the Auto-Stop has all parts sealed against dust.

Our Identification No. 112

● Concrete Volume Computer

An advertising gimmick on which you can have your name printed is the *Yard Tell Scale,* a ready mixed concrete volume computer. The slide-type rule is protected by transparent plastic film.

Our Identification No. 113



● Dustless pallet cleaning in one operation is done by this new Besser cleaner. It handles 300 pallets an hour, cleaning down to the bare metal, with no warping or nicking and automatically compensating for variations in metal thickness. It has air and electric controls.

Our Identification No. 111

● Easy Sack Handling

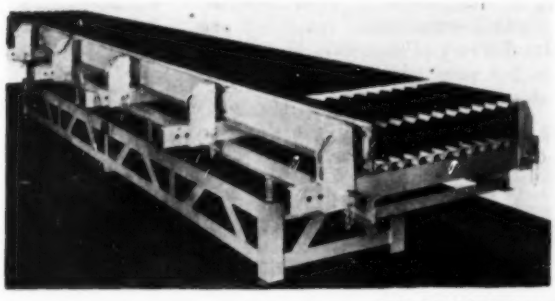
"Twice the work with half the effort" is the promise of the *Twin-Tilt* hand truck for handling bagged

products. One man moves a stacked 1000 lb. load, thanks to a special tilting arrangement that loads the entire stack onto the truck. Wide molded-rubber tires are mounted on roller-bearing wheels for easy rolling. The all-metal, heavy-welded frame has no sharp edges.

Our Identification No. 115

● Unitized pallets of block are stabilized by Signode metal straps at a New Jersey block plant. Strapping is also used to carload these pallets. A special strapping machine combines stretching, sealing and cutting into one operation.

Our Identification No. 116



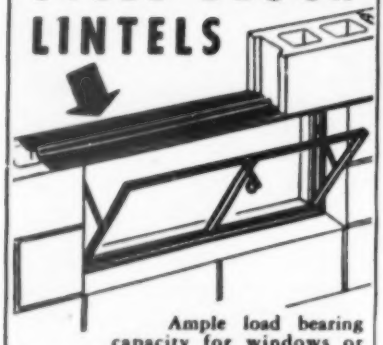
● Production-line precast joists are made with this Kirk & Blum vibrating table. Joists are poured 10 at a time and lifted off the table (forms and all) for drying while additional forms are being poured.

Our Identification No. 114

For better, stronger window installations

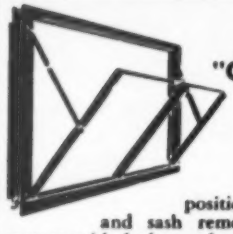
VENTO

STEEL BLOCK LINTELS



Ample load bearing capacity for windows or doors. Available from 2-ft. 6-in. to 5-ft. Formed from 10 gauge hot rolled steel with stiffening crimp in center. Beveled edge provides masonry bond and seat for mortar. Saves costs through use with standard 8-inch blocks. Vento pressed steel angle lintels for brick construction also available.

VENTO STEEL BASEMENT WINDOWS



VENTO "CHAMPION"

Three sizes. Effortless operation gives three position ventilation and sash removal. Double contact with leak-proof water-shed sill stops wind and rain. 14 gauge electric welded frame. Fins welded to jambs for easy installation in block or poured walls.

VENTO "THRIFTY"

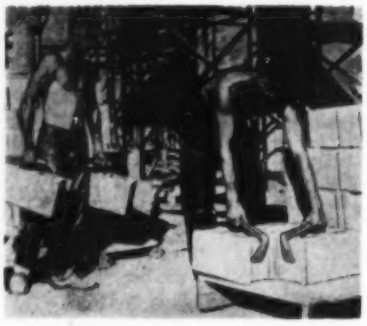
A real economy window for lower cost housing. Three sizes, sturdy construction, smooth operation, two position ventilation and easy sash removal. Fin flanges at jambs for quick installations.

***Also** casement, utility and barn windows. Write for full information.*

VENTO STEEL PRODUCTS CO., INC.
254 COLORADO AVE. BUFFALO 15, N.Y.

● Block Lifter

Faster concrete block handling on construction sites is possible with a new Block-Lift designed by *Waco Mfg. Co.* Made of lightweight mag-



nesium alloy, the Block-Lift enables the mason to hold the block firmly with one hand and "butter" and line up the block with the other. Each mason's helper can carry two block per trip using the device. A tandem version permits the helper to hoist two block at a time, automatically releasing them when they come to rest on the platform.

Our Identification No. 117

● Fork Lift Truck

Automatic transmission, with no clutch pedal or gear shifting, is featured in a new *Mobilift* fork truck, the 4,000-lb. D-424. Designed for easy operation and driver comfort the truck has two push-pull levers to control direction and speed. Its floor board is 23½-in. above ground level. The driver can enter from either side. A one-piece hood, hinged on a

counterweight gives access to a 6-cylinder, 65-bhp Chrysler power plant. The D-424 has a 48-in. wheelbase and an overall length of 82½-in. less forks. It has a hydraulic hoist and 83-in. high mast.

Our Identification No. 118

COMPLETE PLANTS from a Single Source

- "Tilt-Up" Mixers
- Ready-Mix Plants
- Expressway Semi-Portable Plants
- Dry Batch Plants
- Cement Bins
- Aggregate Bins
- Cement Storage

ENGINEERED TO WORK TOGETHER

From conveyor to elevator, from bin to mixer Burmeister equipment is designed and built by the same organization. Because each product is *"engineered to work together"* you are assured less costly "conversions," maximum production speed, accurate delivery of materials, and greater economy of operation. See your nearest Burmeister Distributor or write for details.

FREE CATALOG

Send for new 16-page illustrated Catalog of Burmeister Plants and Equipment.

COMPLETE PLANTS FROM A SINGLE SOURCE

Burmeister

L. BURMEISTER CO., 4531 W. MITCHELL ST., MILWAUKEE 14, WISCONSIN

Personal Mention

Heads Iowa R.M.C. Assn.

H. L. Yates, operator of the Ideal Ready Mix Company, Ottumwa, Iowa, was elected president of the Iowa Ready Mixed Concrete Association at the recent annual meeting of that organization in Des Moines.

Employees Honor Knudsen

Co-workers of Chris Knudsen of the Nelson Concrete Culvert Company at Champaign, Ill., gathered at the plant to honor Mr. Knudsen, who retired from his duties as plant superintendent on March 1. He had been associated with the company for 30 years. He was presented with a television set as a parting gift.

Lock and Yager Promoted

Robert S. Lock was recently named general sales manager for the Poston Brick & Concrete Products Company, Springfield, Ill., and Carl W. Yager Jr. was made city and district salesman.

Thomas New Choctaw Manager

M. H. Thomas, who has been with Choctaw, Inc., since 1940 as manager of the Arkansas concrete pipe division, has been appointed general manager of the firm. Choctaw manufactures concrete pipe and bridge slabs and distributes construction and industrial equipment, machinery, and mill supplies.

Carter-Waters Promotion

W. L. Reed has been appointed manager of its building materials sales department by the Carter-Waters Corporation of Kansas City, Mo. Previous to joining the firm in 1951, Mr. Reed was with the C. A. Brockett Cement Company for 15 years.

Lindsey Heads Virginia Assn.

Emmett W. Lindsey, secretary-treasurer of Concrete Ready-Mixed Corporation of Roanoke, has been named president of the Virginia Ready Mixed Concrete Association; John Roberts of Richmond is the new vice-president, and Phillip Brooks of Hopewell is secretary-treasurer.

Murphy Awarded Managership

Claude Murphy has been named general manager of the Wisconsin Valley Concrete Products Company at Wisconsin Rapids. Mr. Murphy served as assistant manager for the last two years. The announcement was made by Raymond J. Melville, president. Mr. Murphy was also re-elected secretary-treasurer.

Heads Columbus Block Ass'n.

James E. Crissman was recently named president of the Columbus (Ohio) Concrete Block Association. C. L. Wiles was elected vice-president; and John F. Royer was re-elected secretary and treasurer.

American Vitrified Products Opens California Operation

Opening of a plant for the manufacture of reinforced concrete pipe at Duarte, Calif., is scheduled in the immediate future, according to officials of the American Vitrified Products Company of Cleveland, Ohio. The plant is a part of a $500,000 development. Plans for an office building on the 24-acre site were also announced. About 50 workers will be employed in the pipe plant.

Paul Henley, company engineer, is in charge of plant construction. American Vitrified Products operates plants in Ohio, Indiana, Michigan, and Wisconsin.

Servicised

Resin Base Concrete Curing Compound

- Does not alter appearance of concrete
- Dries rapidly, forms clear, vapor-tight membrane... assures positive control of curing
- Readily accepts paint or adhesives after curing

Servicised Resin Base Curing Compound is recommended for curing exposed concrete such as pavement slabs, bridges, abutments, walls, etc. Sprayed or painted, it forms a uniform membrane capable of holding moisture in the concrete to assure proper curing.

Write for complete details and circular on Servicised Concrete Curing Compounds.

SERVICISED PRODUCTS CORPORATION
6051 West 65th Street, Chicago, Illinois

MAY 1954

MORE INFORMATION PLEASE

THE CONCRETE MANUFACTURER
431 S. DEARBORN ST.
CHICAGO 5, ILLINOIS

Please send more information on items described in editorial columns of this issue, as circled below.

101 102 103 104 105 106 107 108 109 110

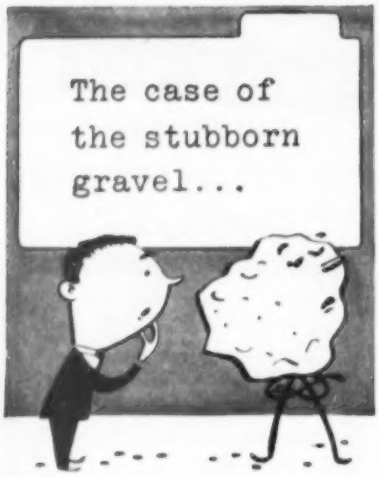
111 112 113 114 115 116 117 118

Name _____ Title _____

Company _____

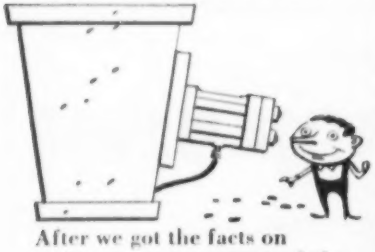
Address _____

City _____ Zone _____ State _____



Yes, believe it or not, chaos really reigned in this case of a Washington gravel plant . . . all because of a pile of stubborn gravel.

It bridged . . . it arched . . . it plugged . . . and generally tied up production.



After we got the facts on the case, we recommended a CLEVELAND vibrator, and in nothing flat that stubborn gravel was moving continuously and smoothly.

Tell us your materials handling problem, or ask for our detailed literature.

AIR *and* ELECTRIC

2710 Clinton Avenue • Cleveland 13, Ohio

Smithwick Concrete Prod. Installs New Curing Room

Installation of a new drying room capable of curing 2,000 8- by 8- by 16-in. concrete masonry units or 4,000 partition units simultaneously has been announced by officials of Smithwick Concrete Products, Portland, Oreg. A hot-air conventional system utilizing propane gas as fuel can heat the kiln to a temperature of 500 deg. F., furnishing 1,000,000 B.t.u. per hour. A 2,000 r.p.m. blower fan provides a complete change of air every 50 seconds.

Laboratory tests show that the moisture content of units cured in the new kiln is reduced to well below 7 percent and weight is cut to less than 25 lb. The installation of the new facilities ended months of research and experiment on the part of the staff in an effort to meet the stringent new specifications of the U.S. Corps of Engineers.

Albuquerque Gravel Products Buys Dunham Concrete Plant

It was announced recently at Albuquerque, N.M., that the Albuquerque Gravel Products Company has purchased the equipment and property of the Dunham Concrete Company in that city, and that the latter firm will suspend its operation in the state.

Albuquerque Gravel Products officials stated that this firm will discontinue the screening and crushing operations of the newly-acquired property, but will produce concrete. Key personnel of Dunham will return to the firm's operations in Louisiana, and other employees are being absorbed by Albuquerque Gravel Products.

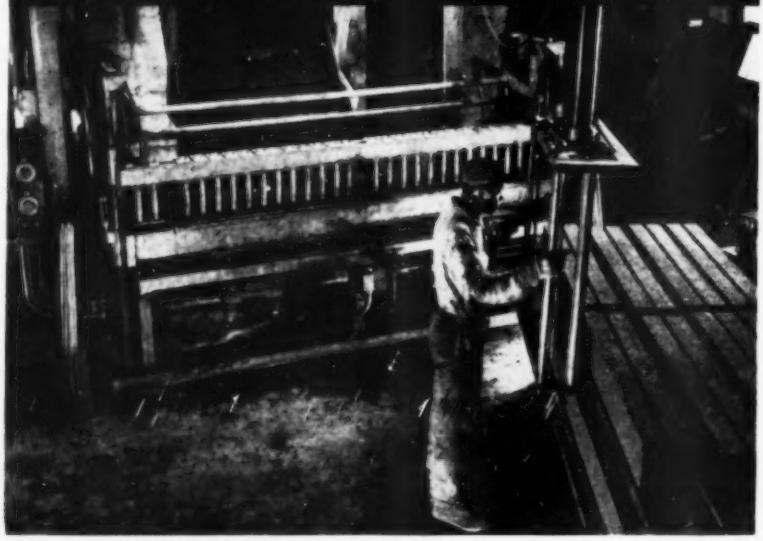
Producer, University Sponsor Prestressed Concrete Contest

Announcement of a competition offering a $250 cash award for a paper on prestressed concrete was made recently by Lawrence E. Stout, director of the Washington University Sever Institute of Technology, St. Louis, Mo. The award will be donated by Sidney Bierman, president of the Precon Concrete Products Company, Clayton, Mo., and will be known as the Bierman Prize.

Papers entered in the competition will be judged by Mr. Bierman, two members of the university faculty, and a representative of the Portland Cement Association. Contestants must submit their entries before May 1, and the winner will be announced on May 15.

enjoy PreCaster profits
from hard-to-make units like lintels

Be the first in your market to offer quantity production prices on concrete units that will strip through a straight box . . . slabs, highway guard rails, fence posts, joists, etc. *Relatively low investment! One man operation!* Write PreCaster Inc. · 5209 Beech Street · Cincinnati 17



Compressed Air Aids—

(*From page 242*)

them as free as possible of dust. The plant is located close to the ocean and fog, which means that moisture-laden air can cause serious hardening of the dust if it is not removed.

The lift trucks handling concrete blocks are cleaned by compressed air every four hours to avoid extreme engine wear and high gasoline consumption caused by dust conditions. Pallets are automatically cleaned by compressed air pressure on oil as they go into the block machines. This automatic system, which is controlled by a solenoid valve, prevents rusting and concrete coating, and also makes easier the brush cut-off by keeping the concrete soft.

Large air hammers are used to remove the worst deposits on mixers, while relatively small air hammers are employed for final cleaning. This is done at the end of each day, or if the plant is running continuously, every ten hours. This saves strain on the electric motors, and prevents gradual reduction of batch quantities. The air hammers also are used for yard repairs.

Playing an important part in keeping the three block making machines operating at the rate of 720 blocks an hour each are the air hoists at these machines. Ease of handling and close controllability make air hoists preferred equipment for loading pallets. The smooth action of the hoists also prevents jolting of the fresh concrete and resultant spoilage.

Stacking of blocks usually is done with a loader, but on special runs where the loader cannot be used, hand stacking is avoided by the use of an air cuber to turn every other layer of blocks. The cuber has two clamps, one operated by an air cylinder with a short arm, the other by an air cylinder with a long arm.

Because of the importance of compressed air to the maintenance of uninterrupted production at the Hazard plant, ample air compressor capacity must be assured for all needs. The compressed air system which serves the concrete block plant also serves the truck repair garage for the company's general contracting business, as well as its hot mix plant. Chief use by the mix plant is for the air cylinders which open and close gates at the automatic scale. The garage uses compressed air for its pneumatic tools, tires, paint spraying and other such truck repair purposes.

Two air compressors supply the system. The larger one is a two-stage, three-cylinder compressor. The smaller unit cuts in for peak loads and supplies entire needs when loads are reduced, such as in the evening. This unit also provides standby power if needed.

Concrete Piling, Platforms To Be Made at Morgan City

At Morgan City, La., facilities are going up for the production of concrete piling and platforms by Gulf Prestressed Concrete Products. These units are used in off-shore and shallow-water oil well drilling and producing processes, and for causeways, bridges, and related structures.

Equipment for the plant includes a 75-ton crane, a concrete batch plant, and a centrifugal casting machine. The latter was made by the Cen-Vi-Ro Machine Corporation at the Idaho Concrete Pipe Company's Nampa plant. This big machine, reportedly the first of its type, will turn out hollow cylinders of concrete 24 to 54 in. in diameter and 16 ft. long.

According to Eugene Lawrence, spokesman for Gulf Prestressed Concrete Products, the plant at Morgan City is expected to be in production by June.

ARE YOU PROFITING BY THE SALE OF LINTELS AND SILLS ?

If you are not, it may be because you are not fully familiar with the new and effective way of producing these wanted parts on the

KENT LINTELATOR

With this machine, of which hundreds are already in use, you can expand your sales and profits without increasing your sales force.

Once the availability of machine-made lintels and sills is made known, builders buy them readily as their quality and desirability is immediately apparent.

Why should builders purchase more expensive steel lintels to be installed only by steel erectors when they can obtain reinforced concrete lintels that their own masons install without delay at much less expense?

Why also should you delay looking into the promising possibilities of this machine which eventually will be found in every block plant?

The KENT MACHINE COMPANY

CUYAHOGA FALLS, OHIO

CONCRETE PRODUCTS MACHINERY SINCE 1925

quality guaranteed

MASONRY WALL REINFORCEMENT

(Insert shows Flush Weld)

BLOK-LOK

. . . for better walls

- **flush-welding makes Blok-Lok ideal for small mortar joints**
- **less breakage — strength of rod steel and weld increased**
- **special corners mean no thick joints, better bond, less labor**
- **simple design means less steel, lower freight costs**
- **furnished in 100,000 psi steel for any wall width**
- **ASTM specifications for masonry reinforcement guaranteed**

●

BLOK-LOK Standard — 9 gauge steel wire

BLOK-LOK Heavy — 3/16-in. rod with 9 ga. cross members

Finishes — galvanized wire, hot-dipped galvanized, and brite basic

●

Bonafide lab reports attest to Blok-Lok quality. Copies on request. Send for complete information.

Nationwide Distribution

AA WIRE PRODUCTS CO.

7211 Cottage Grove Chicago, Ill.

RAdcliffe 3-8313

Minneapolis Pipe Concern Has 2 Setups to Make Pipe By Vibration Process

The Twin City Concrete Pipe Company of Minneapolis, Minn., recently set up under one roof two separate manufacturing units for the production of concrete pipe by means of vibration alone. This involves the use of dry concrete (less than 1-in. slump) which is compacted by Vibromac vibrating units delivering impacts variable from 500 to 3,000 lb. per revolution.

At the Minneapolis plant there is a stationary casting assembly which is used for manufacturing 24-in. and 30-in. diameter C76 reinforced pipe in 6-ft. lengths, and a converted tamp-type pipe machine used for making 36-in., 54-in., and 60-in. reinforced pipe in 6-ft. lengths. Only the revolving base table and the concrete feeding facilities on the converted tamper are used in the new process. A collector ring over the shuffling plate of the standard Quinn pipe forms supplies electric current to the vibrators, which are attached to brackets welded to the outside of the steel molds.

Despite limited plant space the manufacturing process is said to be smooth and efficient, and to permit the production of concrete pipe on an acceptably continuous basis regardless of size. Actual cast time for a 24-in. by 6-ft. pipe is approximately one minute, plus an additional minute required for troweling the rubber-gasket-joint tongue. Even the heavily reinforced 36-in. by 6-ft. pipe (C-76 Table II) is cast in about five minutes.

On crushing tests conducted at the Twin City Testing and Engineering Laboratory the first 0.01-in. cracks were registered on C-76 type pipe at 36,000 lb. Maximum absorption has been found to run about 2.4 percent, as compared with an A.S.T.M. specification limitation of 8 percent.

Manufacturing 24-in. by 6-ft. C-76 pipe at the Twin City Concrete Pipe Company's plant in Minneapolis. This is the stationary casting assembly described in the text above.

A. C. I. Sets Up Committee On Concrete Construction

At its meeting in Houston, Tex., on October 28, the Board of Direction of the American Concrete Institute approved the formation of A.C.I. Committee 331, Structures of Concrete Masonry Units.

Purpose of this committee will be to develop methods of structural analysis and design; to recommend design and construction practices; and to provide users of concrete block, brick, and tile with authoritative guidance in plain and reinforced concrete masonry. R. E. Copeland, director of engineering, N.C.M.A., was named chairman of the committee.

According to a survey prepared by the Texas Ready Mix Concrete Association, the production of ready-mixed concrete increased by 13 percent in the state last year. Thomas L. Amis, vice-president of T.R.M.-C.A., stated that about 40 percent of all concrete used in construction in 1953 was produced by ready-mix firms.

Here the rubber-gasket tongue forming header has been placed on a filled pipe form. Note the collector ring which feeds electric current to the two vibrators.

Botched Batches

WE'VE just received a publicity release concerning an electronic marvel called the Message Repeater which is described as "the machine that talks at the sight of a human being". About the size and shape of a Brownie camera, this ultimate expression of man's inhumanity to man automatically repeats any

desired message in a clear, clarion voice whenever a human being enters its area of influence.

Our source of information extolls the possibilities of the Message Repeater as a safety device, pointing out that it could be installed at hazardous points throughout industrial plants to warn employees of the dangers which threaten them. All we hope is that they'll teach the damned thing to clear its throat, or cough, or emit *some* introductory noise so that workers won't be so startled they'll fling themselves into the very hazards 'tis hoped they will avoid.

Mama Knows Best

WE ARE intrigued to note that trade association executives and public relations specialists have finally brought their talents to bear on the over-all problem of how public attitudes toward trade associations can be improved. We hope the boys made some progress toward a solution of this very real problem, but it is our personal opinion that the path they must traverse is a steep and a thorny one.

The difficulty, as we see it, is that in a matriarchy, such as we have in this country, public attitude is largely determined by what the little woman thinks, and no amount of testimony to the contrary seems likely to allay the average housewife's ingrained belief that Sodom and Gomorrah at their worst were veritable Sunday-school picnics compared with the goings-on at most association conventions. The notion even persists in regard to those organizations which have successfully urged that their annual gatherings be attended by both husbands and wives, a practice, by the way, which a lot of men feel neatly cancels one of the best arguments for going to conventions in the first place.

It's all very complex, and our advice to the association fellows would be to learn to live somehow with the existing public attitudes. One of the things that helps to bolster convention attendance is the average Joe's wistful notion that some day he'll encounter an affair that is at least a pale reflection of the kind the old timers reminisce about.

Physician, Heal Thyself

IN case the connection between the shy young woman and the concrete block (that's the thing with the *straight* lines, Junior!) in the accompanying photograph may elude

our readers, we'd like to explain. According to the release that was attached to the picture, she's explaining that just one tablespoonful of a certain admixture per bag of cement effected a substantial improvement in the texture, color, and general eye appeal of the block.

So far as we can judge, there's nothing wrong with her texture and color, but we're hanged if we don't think she might try say *half* a spoonful now and then for that old eye appeal.

COMMENT
from the
BUTLER ENGINEER

Recession? No!
Farina? Yes!

Amazing! Hey, that's no word for a conservative engineer to use (sounds more like an adman). But there's no other word that expresses the response at the Ready Mixed Show at Chicago.

Recession? Gentlemen, there ain't gonna be any. Wise, farsighted executives in the Ready Mixed field and those who plan to enter it, have carefully watched the economic trends. They made no move until they were certain. *And then they went into action.*

Never have we been so busy at a Ready Mixed Show. I repeat "amazing".

And firm, solid orders. No "if's".

The same thing happened at the National Concrete Masonry Convention in Washington, D.C. If I'm any judge, both meetings could be listed as "Butler Preferred".

Happy as we are about those orders, we're happier still because of a broader aspect those orders imply: it's a positive and assuring sign that business — particularly in the construction industries is sound, solid and with a very, very bright future.

The reception of our Ready Mixed Show Exhibit was heart warming — and leaves us, not smug, but more than slightly proud. It was a carefully conceived, partially 3-D, highly abstract background design interpreting plant structural parts, materials and product flow. It was far from a literal presentation — and it went over big with the crowd. Many suggested it should be shown in art galleries as an outstanding example of top flight modern design in industrial interpretation. Thank you, kind sirs.

Well, we're back home after those banquets — and back to home-cooking, farina and skim milk, that is.

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

"If our executives did not read BUSINESS PUBLICATIONS I'd consider them unfit for their jobs"

Col. Willard F. Rockwell,
Chairman of the Board,
Rockwell Manufacturing Company

"We feel the same way about our sales managers," Colonel Rockwell continues. "We expect them to know what is being printed in the business publications and to guide themselves accordingly. Further, we ask our salesmen to keep our home office informed about the comments of our customers on business periodicals."

Like Colonel Rockwell, other business and professional leaders the country over are reading business publications covering their fields of activity. They are getting from these magazines vital information about new products, new methods, new marketing trends, price and distribution changes through the advertising as well as the editorial pages. The Business Press offers a direct route to anyone who has anything to sell to business and professional men.

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The national association of publishers of 161 technical, professional, scientific, industrial, merchandising and marketing magazines, having a combined circulation of 3,524,478 ...audited by either the Audit Bureau of Circulations or Controlled Circulation Audit, Inc.... serving and promoting the Business Press of America...bringing thousands of pages of specialized know-how and advertising to the men who make decisions in the businesses, industries, sciences and professions . . . pinpointing your audience in the market of your choice. Write for complete list of NBP publications.

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Complete block and brick plant—1950 Model, Series 300. Two block at a time machine with all attachments for 4's, 8's, and 12's.

Dunbrick Machine, makes both standard brick and jumbo brick, also stepping stones. Over 3500 aluminum pallets for different size blocks.

Dunn, two bag mixer, twenty-six block carts, eight brick carts with hand lift truck for moving them.

This is a complete plant, all equipment guaranteed in top condition and can be inspected in daily operation. We are replacing it with a Besser, high-producing machine.

Price: $7,500.00. Will accept smaller machine on trade.

ALEXANDER CONCRETE WORKS
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FOR SALE
Joltcrete & Equipment

1—No. 9 Joltcrete 45% void pallets, racks, turntables, air offbearer and mold boxes for the manufacture of 4", 8", 12" concrete and cinder block. This equipment is in excellent condition. Also spare motors and parts for the above equipment. Daily average production per 8 hour shift in 8" equivalents was:

Concrete units 4320
Cinder units 5730

Box No. E-61, c/o THE CONCRETE MANUFACTURER
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2—L-5 Lith-I-Block Machines. Three block per cycle and fully automatic. Immediate delivery. Can be seen in operation at our plant. Contact:

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LOWER COST
PACKER-HEAD WINGS
Proved to last as long or longer—yet cost considerably less. Write for prices.
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Write for free samples and prices of "LANSCO" CEMENT COLORS produced in 34 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages.

manufactured by
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One 3 yard Smith concrete mixer (4½ yard agitator) mounted on Ford F-8 truck in good used condition and operating in our fleet daily. We have too many 3 yard trucks and not enough 6 yard trucks. Will give reasonable terms if desired.

GRAYSON LUMBER COMPANY
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GEORGE W. HOFFMANN CO.
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SIOUX CITY, IOWA, U.S.A.
Concrete Pipe Forms & Vibrators

SALESMAN WANTED

To sell our famous Formula No. 640 colorless masonry sealer, silicone water repellent, concrete hardener, floor mastic, admix for topping floors always cold and wet, curing compound, rubber enamel, roof coatings, gilsonite paints, floor wax containing duPont's Ludox. Thirty products. Contact building owners and managers, contractors, etc. Commission. Territory. Name this magazine. Write Haynes Products Co., 4007 Farnam St., Omaha 3, Nebr.

WANTED TO BUY

Good used BLYSTONE mixer.
5 or 6 yds.

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FOR SALE

1—Dunn Korpak Machine.
600—8" & 400—4" modular steel pallets.
1—8" and 1—4" mold box.
1—12' conveyor & 1—18 cu. ft. mixer.
10—48 blk. steel racks & 1—hand lift truck.
1—Case Indus. tractor W/Wagner hyd. loader.

Write ARMSTRONG COLE
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BUILD GOOD WILL

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A good way to get back a large part of the money you spent for equipment you're no longer using is to SELL IT.

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Let someone else have the benefit of equipment you can't use in exchange for hard cash you can use in other ways.

So important is the Concrete Manufacturer used equipment section that many readers (and there are over 24,000 of them—all potential buyers) turn to it first when C M arrives on their desk.

Tell us what you have to offer for sale or trade, we'll set up the ad for you. Mail today and watch the results.

THE CONCRETE MANUFACTURER
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VIBRAPACS FOR SALE

2—8 Year old Vibrapacs, excellent condition. May be seen in operation, running at 945—8" per hour. 10 H.P. Plugged Vibrator motors. Reconditioned in February.

Bergen Building Block Inc.
Industrial Avenue
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MINERAL COLORS
for
BRICK MORTAR STUCCO-PLASTER-CONCRETE

"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
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1—2 Block Lith-I Bar Machine. In good condition. Complete with all attachments.
2400—18 x 18 x 5/16 Steel Pallets
44—Heavy duty Steel racks

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PALLET RINGS
Write for full information
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Should be in every BASEMENT!

● Basements as well as utility rooms in basementless houses should be protected against water damage. That means using Medusa Waterproofed Cements (or Waterproofing Paste or Powder when waterproofed cements are not available) in all concrete and mortar. These Waterproofings bring economy for the builder, satisfaction for home owners and extra profits for you.

The cost of using Medusa Waterproofings over a non-waterproofed cement is so small that it means practically nothing in the total home cost, yet assures home owners of dry basements and utility rooms for years to come.

Medusa Waterproofings are available everywhere in one of these forms—Medusa Waterproofed Gray and White Portland Cements, or Medusa Waterproofing Paste and Powder for mixing with regular portland cements. Contact your nearest Medusa sales office for further details.

MEDUSA Portland Cement Company

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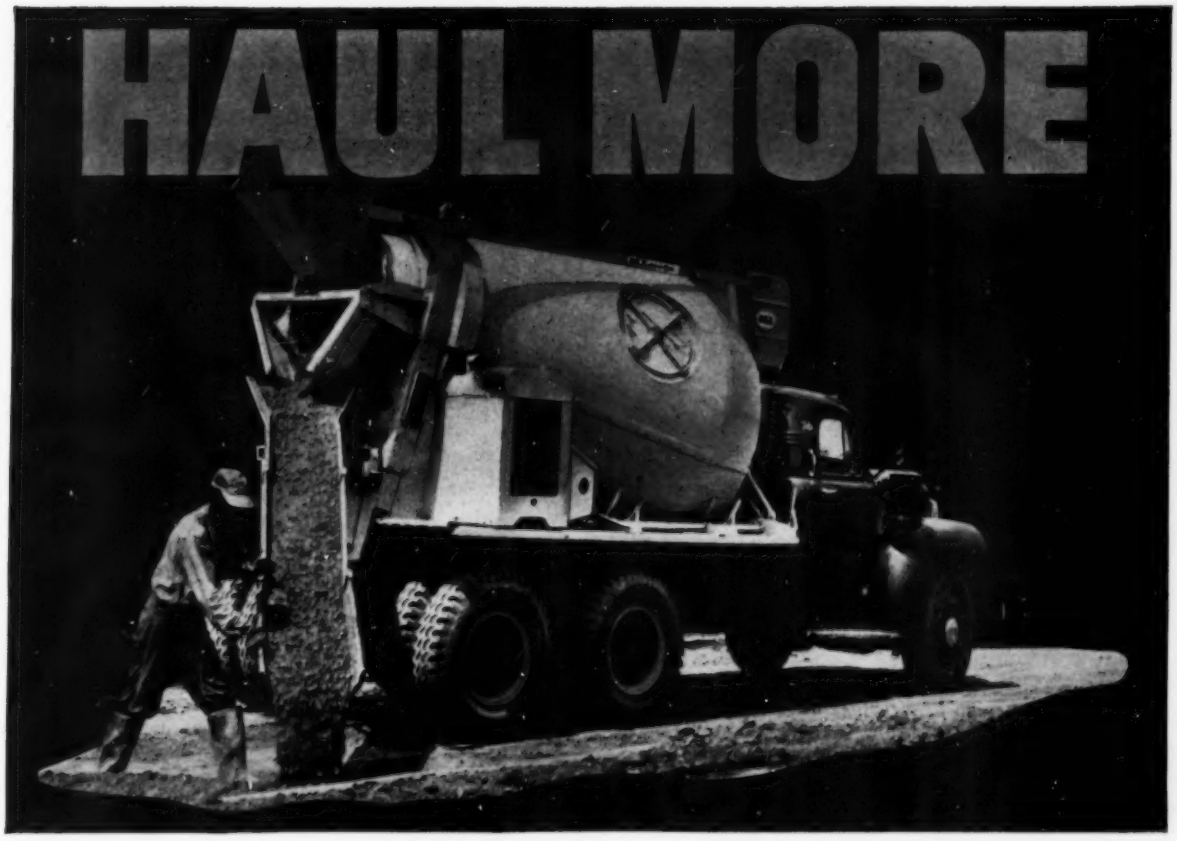
MAKERS OF AMERICA'S FINEST PORTLAND CEMENTS FOR OVER SIXTY YEARS

HAUL MORE



...with Rex Adjusta-Wate Moto-Mixers

EVERY TRIP...because the exclusive Rex Adjusta-Wate design places load centers of gravity farther forward so that *all* axles of the truck can be loaded for *maximum legal payload.*

EVERY DAY...because the Rex Adjusta-Wate combines "time-saving" operating advantages, cutting minutes from each mixer operation. These minutes *saved* make possible shorter trip cycles...resulting in *more trips per day.*

EVERY SEASON...because the Rex Adjusta-Wate is built for years of dependable, heavy-duty operation, free from costly maintenance. Today, profitable ready-mixed plant operation demands a mixer to roll day after day, all season long without interruption.

The Rex Adjusta-Wate has the rugged construction and balanced design that mean lower maintenance cost, less down time, bigger legal payload...*every season.*

Add to profits...not to costs with a

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Chain Belt Company, 4782 W. Greenfield Ave. Milwaukee, Wisconsin

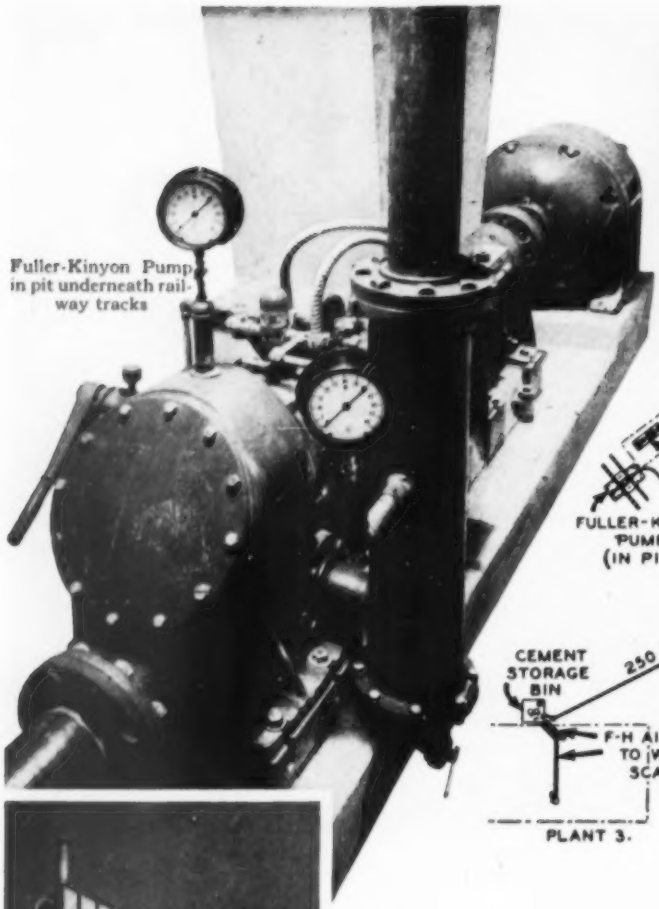
CHAIN BELT REX COMPANY

CONSTRUCTION MACHINERY

MOTO-MIXERS® MIXERS PUMPS PUMPCRETES® PAVERS

PAT BLOX gets fast • clean UNLOADING and DISTRIBUTION with the

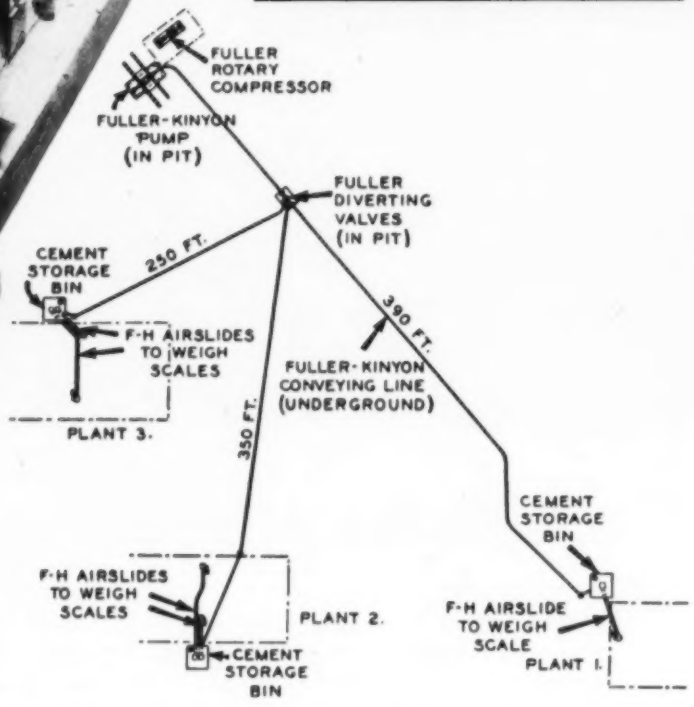
FULLER-KINYON CONVEYING SYSTEM



Fuller-Kinyon Pump in pit underneath railway tracks

Fuller-Kinyon transport line entering top of bin. One F-H Airslide from bin bottom to weigh-scale. (Plant 1 in plan)

Fuller-Kinyon transport line entering top of bin. Dual F-H Airslides from bin bottom to weigh-scales. (Plants 2 and 3 in plan)



This fast-growing, concrete-block plant, really three plants in one, solved its unloading and distributing problem with a Fuller-Kinyon Conveying System.

To avoid interference with trucking and other plant activities, incoming cement is pumped underground from hopper cars to three storage bins by a Fuller-Kinyon Pump with a 200-bbl. an hour capacity. Diverting valves in the conveying line regulate distribution from pump to bins. The conveying system operates on air furnished by a Fuller Rotary Compressor.

From the bins, F-H Airslides — equipped with airfeeders and air-operated, cut-off gates — convey the cement to weigh-scales over the mixers.

If unloading and distributing of dry, pulverized materials present a problem in your plant, a Fuller engineering study may quickly determine a more convenient, faster, more economical system. No obligation, of course.

Fuller

FULLER COMPANY, Catasauqua, Pa.
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420 Chancery Bldg.—San Francisco 4

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS—
COMPRESSORS AND VACUUM PUMPS—
FEEDERS AND ASSOCIATED EQUIPMENT

P-139
1625

Finger-tip control of discharge: Operator starts, stops or completely reverses his drum by lightly moving one lever at front or rear of mixer. Speeds operation, closely controls discharge into carts or buckets. No shock, no clutch slippage at any time.

Yours in the 1954 JAEGER
"Super-Comatic" transmission

Successor to the original TM-15 Comatic, the TM-25 "Super-Comatic" gives every advantage of a *perfected* hydraulic-operated transmission for truck mixers:

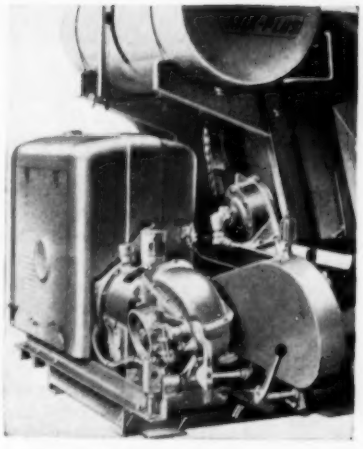
1. **Easy single-lever control of clutches and brake.**
2. **Shock-proof shifting. Automatic brake in neutral.**
3. **Positive clutch engagement by hydraulic pressure. No slippage. No need for adjustment.**
4. **Trouble-free mechanism requiring a minimum of service.**

"Super-Comatic" means foolproof safety and practically eliminates clutch maintenance. Its fast, easy operation and more accurate control of discharge help to speed payload trips.

Send for Catalog TMH-3 or ask your Jaeger distributor to show you the latest construction and operating features of Jaeger Mix Plus models. It will pay you to see why more concrete is today produced by Jaegers than by any other truck mixer.

Designed and perfected for truck mixer operation

Model TM-25 "Super-Comatic" is a rugged, hydraulically-operated transmission with multiple disc forward and reverse clutches, reduction gear and mechanical brake synchronized to act when transmission is in neutral. Brake, hydraulic pump and 4-way control valve are externally mounted for complete accessibility. Entire unit is simple, rugged and truly trouble-free.



THE JAEGER MACHINE COMPANY

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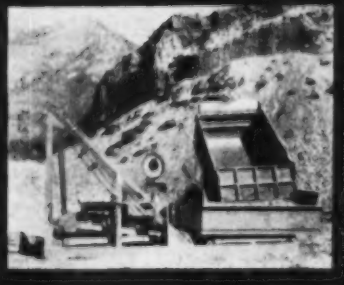
LOADERS • AIR COMPRESSORS • PUMPS • MIXERS • PAVING MACHINES

NEW ON THE JOB
TRAVEL BATCHER
COMPLETELY MOBILE

Saves you 2/3 cost of regular Batch Plants!

SAVES TIME, SAVES LABOR COSTS. SAVES EQUIPMENT... PRACTICAL ON ANY TYPE JOB! EASY TO LOAD!



THE TRAVEL BATCHER can be used to transfer batches of any size from a dump truck to a truck mixer, because the hopper is built low enough to allow dump trucks to discharge into it. The "built-in" scales on the TRAVEL BATCHER allow batching from stock piles with any front-end loader. With the optional side bins added, TRAVEL BATCHER makes for greater production of "volume yardage." This revolutionary new machine reduces the initial purchase cost of a stationary batch plant by 2/3 or more. Because of its "on the job" maneuverability it reduces the number of truck mixers needed by as much as 83%. Maintenance bills, long a headache of every ready-mix concrete operator, are reduced to a minimum.

MAIL COUPON FOR MORE INFORMATION

Write or Wire SOUTHEAST READY-MIX CO.
6540 HOLLADAY BOULEVARD SALT LAKE CITY, UTAH

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ADDRESS _____

CITY _____ ZONE _____ STATE _____

IT'S COMING!
the 1954 Edition of
CONCRETE INDUSTRIES YEAR BOOK
will be ready about May 1

Experienced Operators Turn to the Yearbook as the Final Authority

When new plants are built, when equipment requires replacement, or when existing plants require modernizing and expansion, experienced operators unfailingly turn to The Concrete Industries Yearbook for the know-how information they must have. Today, just as when it was first published 15 years ago, the Yearbook is absolutely unique in its field. And in every year since its inception the demand for copies has far exceeded supply.

Helps Solve Tough Production Problems

Established producers and newcomers alike will find in this bigger and better Yearbook a wealth of well-arranged, specific operating information to assist them in solving production problems and increasing profits. Plant design, the selection and characteristics of raw materials, batching, mixing, curing, handling and marketing are just a few of the important subjects treated.

- Order Now
- Our Supply Is Limited
- Do Not Be Disappointed

$2.00 Per Copy

MAIL THIS ORDER BLANK TODAY!

Concrete Industries Yearbook,
431 S. Dearborn St.
Chicago 5, Illinois

For the attached check, send me.....copies of the 1954 edition of the Concrete Industries Yearbook.

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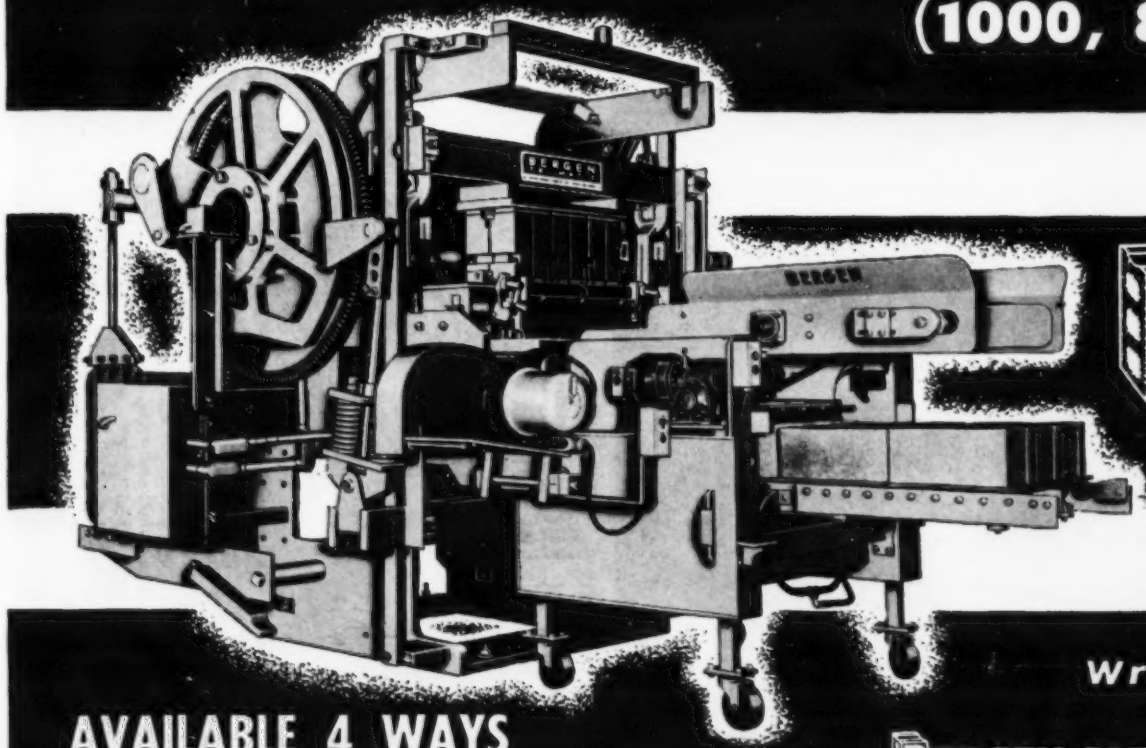
Firm.....

Street.....

City.....Zone.....State.....

MORE GOOD BLOCK PER HOUR

(1000, 8" EQUIVALENT)



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Even a Boy can fight Communism with Truth

Kids on Radio Free Europe Send Hope To Pals Behind Iron Curtain

Twelve-year-old Karel Paces, a young Czech found in a German refugee camp, is broadcasting over Radio Free Europe to his Czech friends behind the Iron Curtain.

He is telling them familiar children's stories in their native tongue—stories now denied them by their Communist masters. These stories have a very real meaning to Karel's friends, a meaning ingrained in the folklore of their country.

Karel Paces is giving his friends, the boys and girls of his beloved Czechoslovakia, the truth of their own country and the free world. It is this truth which every American must support now so that it can be used to fight the deceit, darkness and despair which Communist tyranny is spreading through the satellite countries of Europe.

Day and night, Radio Free Europe is exposing Communist lies and propaganda, and sustaining the hope of oppressed millions that some day they will live in a better world.

At least $4,000,000 is needed this year to support and expand the operations of Radio Free Europe and Radio Free Asia. In addition, the Crusade for Freedom is seeking the signatures of Americans, on Freedom-Grams. These will be your personal pledges of hope for a free world.

This Crusade cannot succeed without your help. Your contribution is needed *now* to help support Radio Free Europe and Radio Free Asia . . . to help fight red lies with truth and to win the cold war.

Support this truth campaign now and help bring to millions the promise of future freedom.

Send your contribution to Crusade for Freedom, c/o your local Postmaster

Help Truth Fight Communism
Give To Crusade For Freedom

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QUALITY CONSCIOUS ? ? ?

There IS Something New Under The Sun

PROFIT FROM THESE BENEFITS:

- No lost time from too wet or too dry batches
- More uniform height of block
- More uniform texture of block
- Stronger block — fewer culls
- Cleaner Pallets
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- Happier Workmen

P & S MOISTURE CONTROL METER

AUTOMATICALLY CHECKS MOISTURE IN RAW MATERIALS (ANY TYPE AGGREGATE) AFTER BEING DEPOSITED IN MIXER AND INSURES UNIFORM ULTIMATE MOISTURE CONTENT OF EVERY BATCH.

Performance Guaranteed — List of Users Upon Request

ROY DARDEN INDUSTRIES, INC.

P.O. BOX 95, NORTHSIDE STATION ATLANTA, GEORGIA

First In Electronics In The Concrete Products Field

WE WELCOME THE GENE OLSEN CORP., ADRIAN, MICH., AS A DISTRIBUTOR TO ASSIST US IN SALES & INSTALLATION OF THIS IMPORTANT NEW DEVELOPMENT.

Speed Up Hand Work with the

BIG BULLY Air Hammer

- Clean Equipment
- Scrape Dry Concrete
- Clean Forms

Weight only 50 oz. 6 in. length, fits hand easily. Exclusive metering trigger delivers 0 to 9000 blows per minute. 28 tools available for 100 different jobs. Special tools made at your request.

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Clean Mixing Trucks Faster

Clean Fragile Mixing Equipment Safely

Vibrating Concrete From Hopper

Superior Pneumatic & Manufacturing, Inc.

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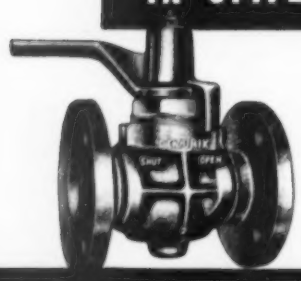
CLEVELAND 25, OHIO

IN SPITE OF GRIT



OR OTHER SOLIDS IN THE FLOW . .

DeZURIK VALVES

CLOSE TIGHT!

The exclusive eccentric principle of DeZurik Easy Operating Plug Valves wipes the seat clean of heavier solids in the flow. The rubber-faced plug seals around grit or other particles that cause leakage in ordinary valves. Get the complete story on DeZurik Plug Valves, manufactured in a full range of sizes. Write for data.

DeZURIK SHOWER CO.
Sartell, Minnesota

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the **ALLIED** metals company
NILES, OHIO

Durable, longer-lasting plain steel pallets!

Mail this coupon for immediate price quotation!

THE ALLIED METALS COMPANY
Niles, Ohio

Please send me a quotation on the quantities I have indicated below! No obligation, of course!

..... 5/16" — 18-1/2" x 26"	..... 5/16" — 18" x 20"
..... 1/4" — 18-1/2" x 26"	..... 1/4" — 18" x 20"
..... 5/16" — 18" x 18"	..... 5/16" — 18" x 19"
..... 1/4" — 18" x 18"	..... 1/4" — 18" x 19"
..... 5/16" — 18" x 22"	..... 5/16" — 18-1/2" x 18-1/2"
..... 1/4" — 18" x 22"	

☐ I'm interested, too, in racks! Send me information!

NAME _____ POSITION _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

flat, steel **Pallets** de-burred!

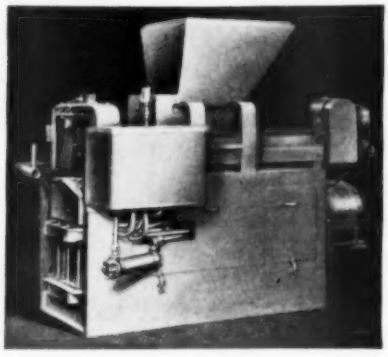
Available

ON LEASE

to Men of Responsibility

HYDRO KORPAK

. . . the Superfine Block Machine



A limited number of Hydro-Korpak Machines will be made available to reputable manufacturers on a monthly rental basis. Write at once for details of an arrangement which can greatly reduce your overall operating costs.

CONCRETE EQUIPMENT COMPANY
531 Ottawa Avenue Holland, Mich.

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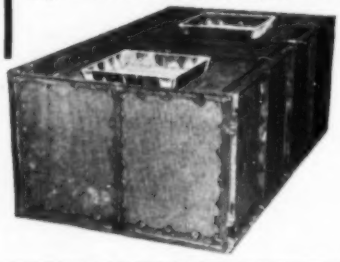
CARPENTER Septic Tank Forms . . .

and Handling Equipment are popular throughout the country because they speed up production, lower labor costs, and supply a top-quality unit meeting every requirement. One man handles our delivery rig.



Write for Catalog

CARPENTER MANUFACTURING CO.
Phone 28938
R.F.D. No. 1, Box 470
RICHMOND 23, VA.

SPEED PRODUCTION — AVOID INJURIES WITH GS SAFETY MITTS . . .

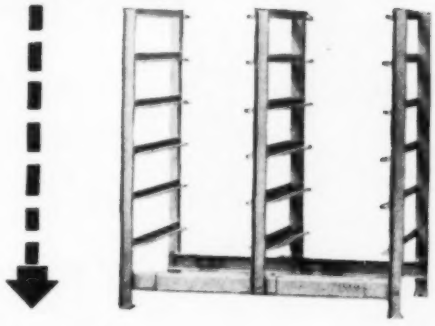
for protection while handling blocks, brick, tile, etc. Workmen like GS heavy thumb-style chrome leather hand pads, sewed with steel thread for extra wear.

ORDER DIRECT TODAY OR SEND FOR FREE CATALOG SHOWING HUNDREDS OF SAFETY ITEMS

GENERAL SCIENTIFIC EQUIPMENT CO.
SAFETY EQUIPMENT FOR EVERY HAZARD
2725 W. Huntingdon St., Philadelphia 32, Pa.

CHASE BLOCK RACKS

Your best buy



Here's why . . .

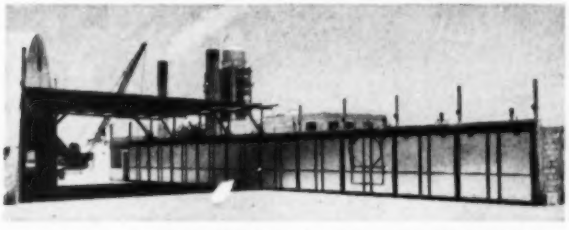
Standard style or specially designed, Chase racks meet your requirements. They're shipped painted and knocked down—assembly is easy—no special tools or welding needed. Chase experience means low prices and years of dependable service.

Send your specifications to Chase.

Chase FOUNDRY & MANUFACTURING CO.

2300 PARSONS AVENUE • COLUMBUS 7, OHIO

SAVE FUEL • REDUCE CURING TIME • CUT COSTS • UP PROFITS with *Standard* KILN DOORS!



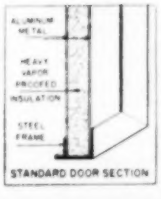
● This is the modern STANDARD kiln door installation of Portland Industries Inc., Riviera Beach, Florida. C. R. Wilson, the firm's Executive Vice President, writes: "Our Standard kiln doors have been very satisfactory."

To suit your individual requirements, three types of STANDARD kiln doors are available—the sliding carrier-type (shown above), the top hinge-type (which is pulled up by a hoist), and the side hinge-type.

CHECK THESE FEATURES

√ Heavy Aluminum Sheets on Both Sides of Thick Vapor Proofed Insulation.

√ Rugged Steel Frame.



STANDARD DOOR SECTION

Get the Best — Send for Details Now

STANDARD DRY KILN COMPANY

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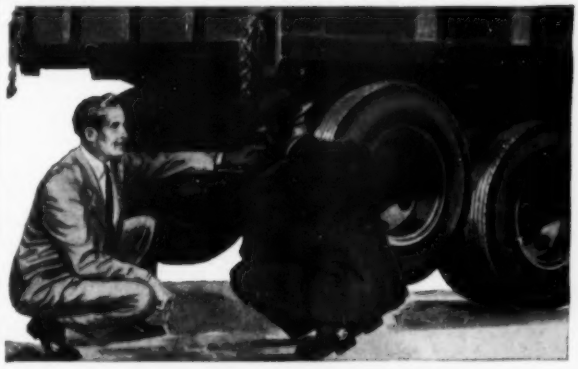
Introducing *HYDRO-TRAC*



new 3rd axle that gives *DUAL-DRIVE DIVIDENDS* WITH *SINGLE-AXLE ECONOMY!*

Truckstell Hydro-Trac gives you 3 trucks in 1 . . .

- 50-50 axle load distribution for greatest payloads
- 80-20 axle load distribution for maximum traction
- Trailing axle up for single-axle truck economy

. . . all in one low-cost, easy-to-operate unit.

Here's how Hydro-Trac works. From its normal 50-50 axle load distribution, weight can be shifted hydraulically by cab-controlled pump which transfers up to 60% of the trailing axle's load to the driving axle . . . supplying up to 80% of a dual-axle drive's traction on ice, snow or muddy roads.

When truck is empty, Hydro-Trac's axle can be lifted off the road, saving tires and gas, providing easier steering and up to 20% shorter turning.

Hydro-Trac weighs much less than a dual-axle drive of equal capacity. This savings means greater payloads. In addition, its proven 4-point suspension cushions the ride, maintains axle alignment and perfect tracking for longer tire life.

Put Hydro-Trac to work on your new or used trucks now. Write today for full information and the name of your nearest Truckstell Distributor.

Hydro-Trac comes completely assembled with matching capacity tubular axle, hydraulic or air brakes, hydraulic pump and cab controls.

Truckstell

MANUFACTURING COMPANY

Union Commerce Building • Cleveland 14, Ohio

Makers of famous Truckstell Dual-Axle Drives, auxiliaries and other types of special truck equipment.

BES-STONE Block Splitter

Made in 2 Sizes — 18" and 24" Models — Produces 960 Split Block per Hour in Fast, Automatic Operation

Splits block in a straight line, with speed and precision and with the utmost safety. The block is placed under the knife automatically . . . the blade descends with a smooth, hydraulic action . . . and the split block is ejected by the incoming block. The operator is always at a safe distance. Machine is easily adjusted for various block heights. The 18" model, shown here, splits block 16" or 18" long, 1⅝" to 8" high. A larger 24" model splits any length up to 24", heights up to 8".

BES-STONE is a new masonry unit with a quarried stone appearance. Can be produced in many sizes and in a series of attractive, permanent colors. No conflict with conventional block. It complements and greatly increases sales of standard stripper block. Write for Bulletin.

BESSER MFG. CO. • Complete Equipment for Concrete Products Plants • Alpena, Michigan, U.S.A.

A 7571-½-H

USE Trinity White

the whitest white Portland cement

. . . for the utmost beauty in architectural concrete units . . . terrazzo . . . stucco . . . light-reflective uses . . . and better color jobs.

Use Trinity White Cement when you want the permanence and workability of a portland cement plus the remarkable beauty of a brilliant white. So when you're asked for something that is better than the ordinary—you'll find that making it of Trinity White Cement is a most constructive suggestion. It's a true portland and meets all Federal and ASTM specifications. For descriptive literature, write Trinity White, 111 W. Monroe St., Chicago.

A Product of GENERAL PORTLAND CEMENT CO. • Chicago • Dallas • Chattanooga • Tampa • Los Angeles

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WHAT VOLUME OF GROUND CINDERS DO YOU NEED?

At Ceredo, West Virginia, The Union Concrete Pipe Company installed this AMERICAN No. 9 Grinder to work on acres of cinders. Results? 30 yards of minus ⅜" aggregate . . . every hour, every day.

Select from 8 AMERICAN Grinders Hourly Output 4 Yards to 75 Yards!

Write your own ticket for your plant's cinder-grinding requirements . . . one of the 8 AMERICAN Grinders will give you the output needed . . . deliver minus ⅜" mesh aggregate without additional separation! Your AMERICAN Grinder will require minimum maintenance . . . will conserve power . . . will help produce low-cost, top-quality cinder block. Write . . . wire . . . phone . . . ask for an AMERICAN grinding expert to help you lick your problem.

CAPACITIES . . . YDS. PER HOUR

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No. 6	6	No. 9A	30
No. 7	12	No. 418	50
No. 8	20	No. 384	75

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W. A. RIDDELL CORP.
BUCYRUS, OHIO

We're Reading Your Mail

Each month thousands of persons who read Portland Cement Association advertisements in national magazines write for more information about concrete masonry houses and farm buildings. These letters from prospects for concrete masonry are of interest to you.

Many of these prospects live in your market area. Do they know your plant is headquarters for concrete masonry information?

Make sure they do. Tell them so in your local advertising. And take advantage of the "preselling" the PCA ads have done. Mention the PCA ads by magazine and page number in your advertising. Offer help and information to those who want concrete masonry houses and farm buildings like those in the PCA ads.

When prospects call show them photos of attractive concrete masonry houses or farm buildings, or take them to see them. Supply names of architects, builders and lending agencies experienced in designing, building and financing concrete masonry construction.

You'll discover that it really pays to "tie in" with PCA ads and to offer helpful service.

PORTLAND CEMENT ASSOCIATION
33 West Grand Avenue, Chicago 10, Illinois
A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

a rugged small truck
Model F-4R
4,000 lbs. capacity

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- Short Wheelbase & Turning Radius
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- Large 10-Ply Pneumatics
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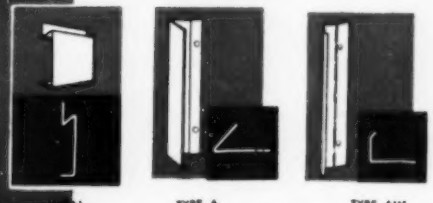
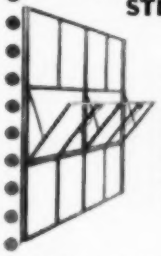


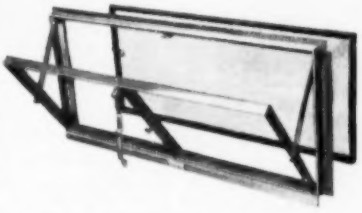
STEEL & ALUMINUM UTILITY WINDOWS

Here is an excellent market for this fine window. Widely used in garages, filling stations, and miscellaneous small buildings. Constructed of heavy rolled sections. Putty or puttyless glazing.

LARGE COMMERCIAL STEEL WINDOW



A large window for commercial or industrial use. Two vents; heavy, hot-rolled sections. Screens available. Mullion bars to combine windows in groups.



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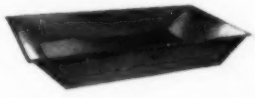

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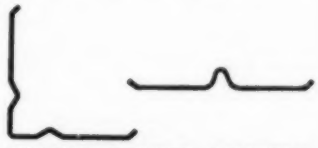

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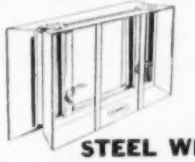
- Angle and concrete block types—
- Formed of heavy-gauge steel with ample load-bearing capacity.



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The very best and cheapest method of installing Kewanee steel basement windows in poured concrete foundations. Eliminates labor and material for making wood forms.

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Commercial Steel Windows • Flue Cleanout Door • Fireplace Ash Dump • Portable Chutes for Handling Ready Mixed Concrete • Coal Hole Rings and Covers • Bell Trap Cesspools • Cistern Rings and Covers • Cast Iron Ventilation Grates • Sewer Tile Strainers • Brick Carriers • Adjustable Flue Thimbles • Built-In Adjustable Mail Chutes • Window Wells • Standard Industrial Windows

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Made of steel and guaranteed against breakage. Locks securely. Door is tight-fitting. Slotted hinges hold it open during coal delivery.

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554 Burlington Street North, Kewanee, Ill.

Our Business

is to increase the operating efficiency of VIBRAPAC Concrete Block Machines

OSWALT SERVICE

has boosted production and profits in many plants . . . it can do the same for

Your Business

The early attempts of purchasers to increase the output of vibrapac machines fell short of success until Oswalt engineers tackled the problem in a big way.

Over a long period of years, many experiments were made and new ideas in construction and operation of the vibrapac were repeatedly tried out to improve block production.

As a result, the Oswalt type of vibration was developed, giving higher moulding speeds and boosting production more than 50%. A new method of chain delivery of the green block was found to prevent cracking at higher speeds. Devices for height and density control were perfected to maintain uniform quality.

By the time patents had been applied for in 1950, more than a hundred thousand dollars had been spent in this productive research and development work for the benefit of the industry.

With this background of experience, Oswalt Service can give you the maximum capacity of your vibrapac without sacrifice of quality—with resulting increase in plant efficiency and profits.

What you pay for Oswalt Service not only comes back in terms of greater production, better quality, high plant efficiency and lower costs — but helps to further the research for future improvements and developments.

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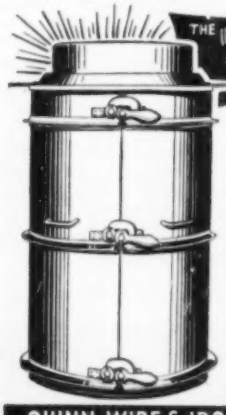
- **Dur-O-wal Products of Alabama, Inc.** P. O. Box 5446 Birmingham 7, Alabama



THE *Quinn Standard*

FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices, and estimates sent on request.

Also manufacturers QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1627 17TH ST. BOONE, IA

Your Profit Starts With the First Cut!

Clipper "SAILS RIGHT THRU"
SAWS & BLADES

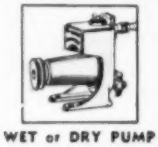
. . . and
FREE TRIAL Guarantees it! . . .

MADE BY THE ORIGINATORS!

Clipper made the World's FIRST Masonry Saw nearly 20 years ago . . . still makes the World's FINEST Saws and Blades for every Masonry and Concrete cutting job

OTHER PATENTED CLIPPER FEATURES

PRESSURE EQUALIZER
Cushions pressure, cutting hard or soft materials. Gives fast cuts and long blade life.

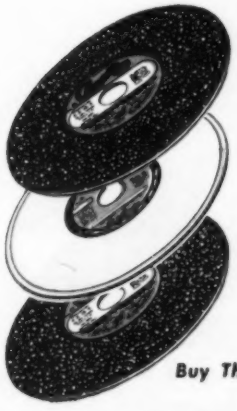


WET or DRY PUMP
Factory Sealed Pump changes Dry Cutting to Wet by turning a valve. Needs no maintenance—no belts to remove.

LOOK for the NOTCHES AND THE BRIGHT ORANGE COLOR

Clipper
SIMPLE in operation
RUGGED in construction
DEPENDABLE in performance

BE SURE — BUY CLIPPER! Patented "SELECT-A-NOTCH" gives instant, positive height adjustment for cutting Quarry Tile, Concrete Block or Stone. Clipper's exclusive deep-seating NOTCHES guarantee true Cutting Head alignment—for maximum blade life . . . increased production.



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CLIPPER BLADES for CONSISTENT QUALITY From Rim to Stub!

SPECIFY GENUINE CLIPPER—and take the gamble out of Blade buying! Nearly 20 years of field and laboratory research PLUS rigid manufacturing controls is your assurance of Consistent Quality in every genuine Clipper Blade. A complete range of specifications for low cost, faster cuts in all types of Masonry Materials, Asphalt and Concrete.

Clipper "Wet" or "Dry" Abrasive Blades
Clipper Diamond Blades
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Buy Them By The Case for Greater Savings!

Saw CONCRETE or ASPHALT with the new . . .

Clipper ConSawMatic

SAW BEFORE BREAKING—and save up to 50% in labor and materials with the new Power Driven ConSaw-Matic. Saw repair patches — gas, water, and air line trenches in floors, streets, walks, runways and highways. Save MORE by cutting contraction joints — eliminate costly hand forming and spalling. 5 MODELS, GAS OR ELECTRIC POWERED

Model C-130

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Your ONLY Guarantee of Complete Satisfaction—Actual on-the-job test!

MR CLIPPER

truck-men DO MORE FOR LESS . . . Says F. F. KIRCHNER

Model 40 loading a cube of blocks on truck

Model DHP with empty rack in front of kiln

"We have one two-ton Truck-Man Model 40 High Lift and two 4,500 lb. Truck-Man Model DHP's," says Mr. Kirchner, of F. F. Kirchner Material Company, St. Louis, Missouri. "What a combination! One DHP shifts loaded racks from the block machine to the kilns, from the kilns to the cubing area and then takes the empties back to the machine. The 40 takes the cubes to the yard, loads cubes from the yard on highway trucks and even unloads bagged cement and other materials that we receive. The other DHP is used for odd jobs and as an auxiliary in shifting racks when we are rushed.

"We've really got the handling problem licked now," he continues, "That DHP is the most efficient little work horse I've seen and it's so darned economical. Moving loaded racks eight hours a day on two gallons of gas —it's almost unbelievable.

"As for the Model 40, it's easy to see that it was designed from the ground up for block plant use.—Rugged, maneuverable, plenty of power, easily maintained and those big tires can go any place.

"Like everyone else, we're watching costs these days. So we were pleasantly surprised to find we could buy all three of these trucks for a lot less than the cost of two ordinary fork trucks. Our experience has proved to us that they are more efficient and versatile, too."

For information on how Truck-Man can cut costs in your operation, complete and mail this coupon today.

truck-man

DIV. OF KNICKERBOCKER CO.
871 LIBERTY STREET, JACKSON, MICHIGAN

☐ Have Salesman Call ☐ Send Info on Model 40
☐ Send General Catalog ☐ Send Info on Model DHP

NAME .....

ADDRESS ..... ZONE .....

CITY ..... STATE .....

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COVERS EVERY REQUIREMENT

. . . for a dependable, long-wearing, non-crystalizing Screen Cloth. Has "Nat-Aloy" Lock Crimp Meshes. Preferred for screening accuracy, economy and serviceability. All Sizes — All Meshes — All Gauges.

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NATIONAL WIRE CLOTH CO., INC
St. Paul, Minn

Palm-coated gloves for concrete products plants

Tougher than leather. Comfortable as canvas.

No. 61-W Grab-it, with extra cool vent-back and rough textured non-slip natural rubber coated palm, is job-fitted for handling bagged cement, other slippery materials and sharp cinder block. Also available with full fabric back.

No. 30 Monkey Grip, with plastic coated palm, is job-fitted for handling most concrete products and greased pallets.

Free Test Offer to Employers: Tell us your operation. Without cost we will recommend and supply samples of the glove that best fits your job.

Edmont Manufacturing Co.
1208 Walnut St., Coshocton, Ohio

LONGEST WEAR
By actual test, Nos. 31 and 304 Monkey Grip, with "triple-thick" palm, outwear all others handling block.

Edmont JOB-FITTED GLOVES

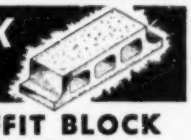
YOUR KEY TO POSITIVE ANCHORAGE IN CONCRETE

PERMANENT RUST PROOF THREADED SOCKET

SEE YOUR BLD'G. MATERIAL SUPPLIER OR WRITE TO:

STAR EXPANSION PRODUCTS CO.
147 CEDAR ST. N.Y. 6, N.Y.

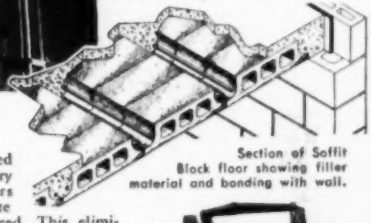
SELL MORE BLOCK ON EVERY JOB!



Furnish VIBRAPAC SOFFIT BLOCK for ALL FLOORS and ROOFS

Removing Centers from Finished Floor.

Permanent, Fireproof Floors and Roofs. Low initial cost and maintenance. Natural base for radiant heat installations. Provide surface of maximum acoustical and insulation value. Can be plastered, or if left exposed, makes a ceiling of beautiful pattern and texture.

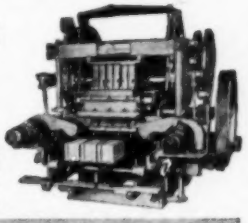


Section of Soffit Block floor showing filler material and bonding with wall.

Soffit Block are supported in place with temporary adjustable steel centers while reinforced concrete slab is placed and cured. This eliminates timber shoring and leaves space below clear during construction.

BESSER VIBRAPAC PRODUCES SOFFIT FLOOR AND ROOF UNITS

The same machine that produces high quality concrete masonry units in all styles and sizes, using Plain Pallets. Continuous, full capacity operation. Fully automatic. No machine operator required.



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ALPENA, MICHIGAN, U. S. A.
Complete Equipment for Concrete Products Plants

CEMENT COLORS with these 3 important features:

- Reichard-Coulston synthetic and natural cement colors are limeproof.
- Reichard-Coulston cement colors are weatherproof.
- Reichard-Coulston colors conform to the Portland Cement Association and American Concrete Institute specifications.

Choose from a wide range of Reichard-Coulston natural and synthetic cement colors: reds, yellows, browns, green. For FREE color card, write today.

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OUR 100th YEAR: 1854-1954

FACTORY: Bethlehem, Pa.
OFFICES in Boston and Chicago
WAREHOUSES in Principal Cities in U.S.A. and Canada

FREE Color Card

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Attention_____

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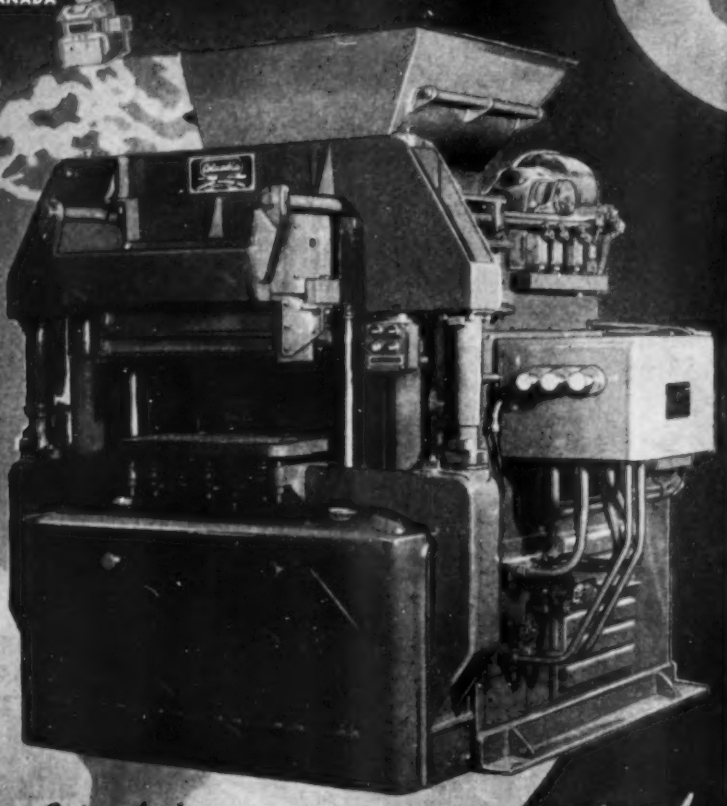

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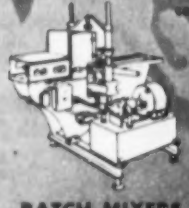

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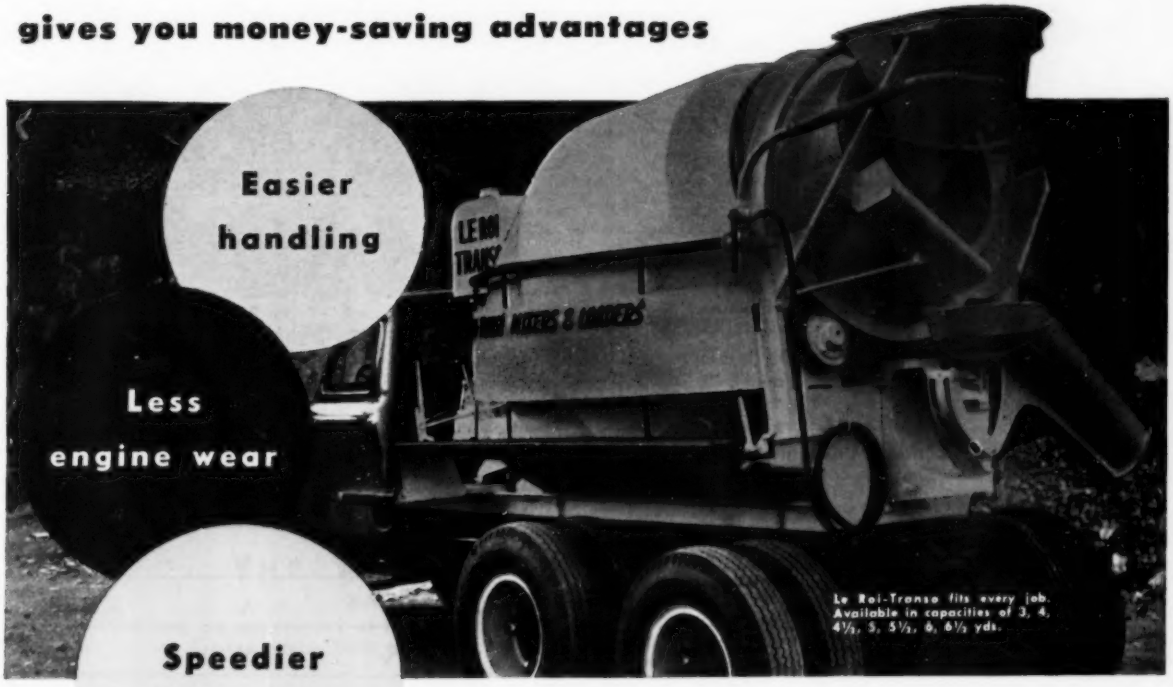
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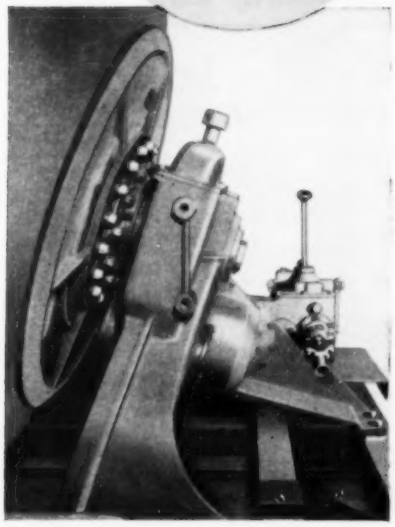

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TD-14

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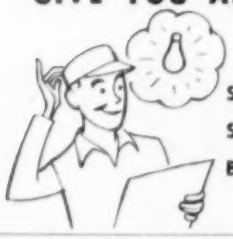

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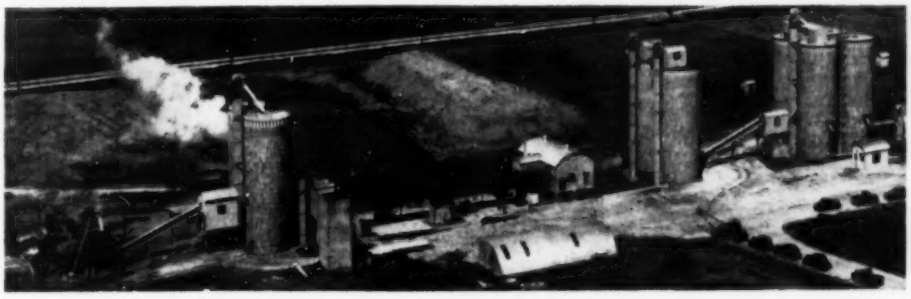

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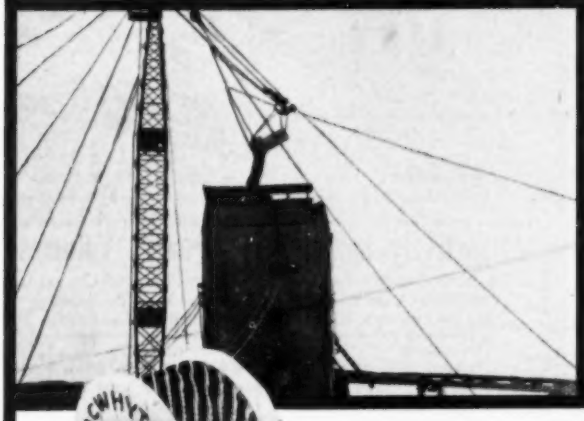

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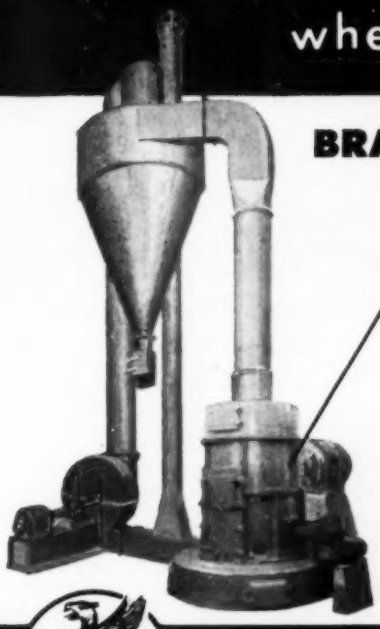

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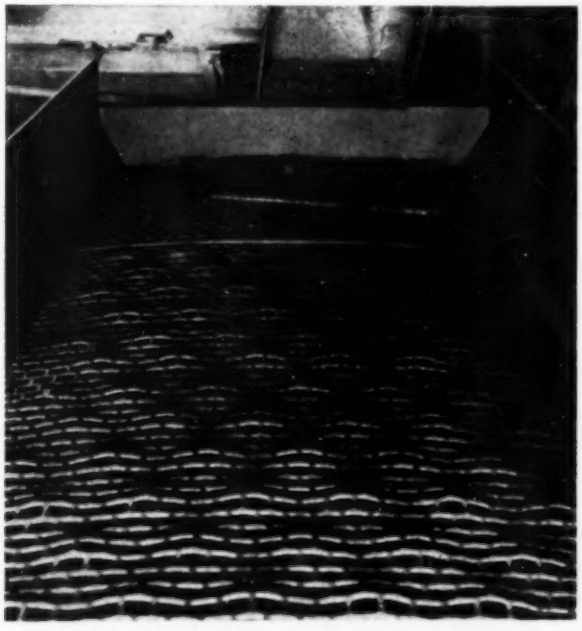

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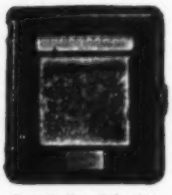

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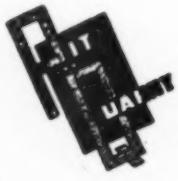

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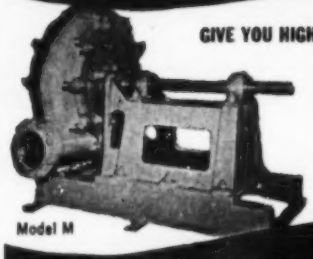

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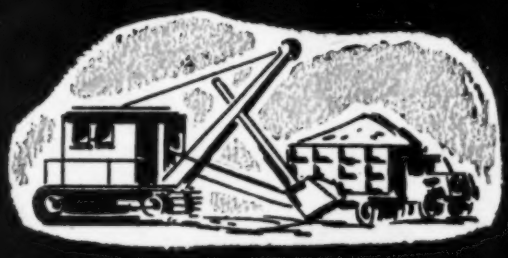

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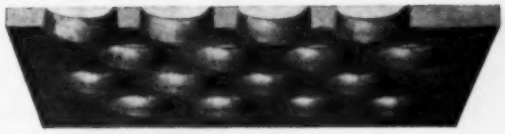

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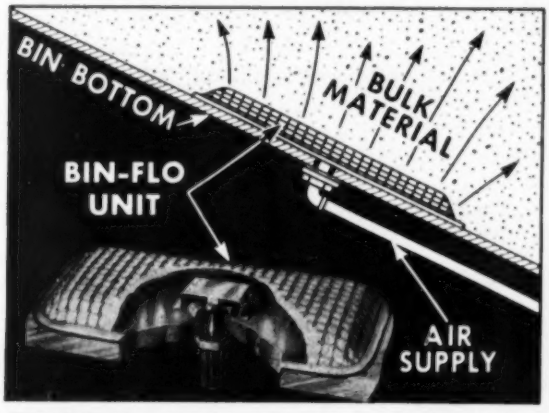

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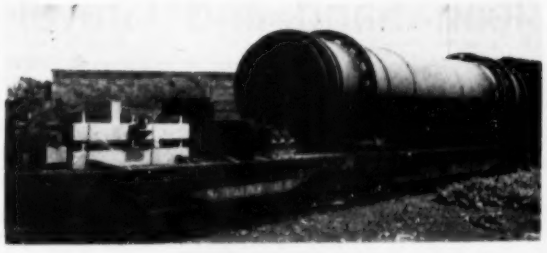

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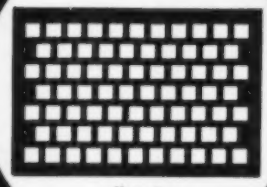

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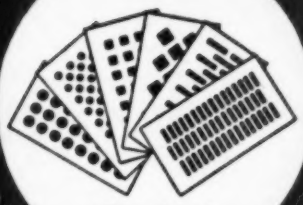

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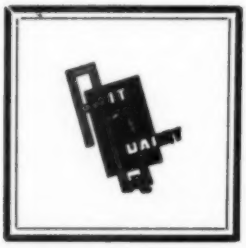

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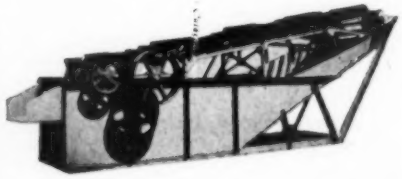

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8—6' x 40', 5' x 40' Ruggles-Coles; 54" x 25' Class Xf-4 Ruggles-Coles, also 3—3' x 50', 5' x 50', 6' x 60', 7' x 70' Direct Heat. Also 3—6' x 50' Louisville Rotary Steam Tube.

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3—#0, #00, 8" Raymond Screen Mills

2—#51 Raymond Imp. Mills

3—Mikro #4TH, #2TH, Bantam SH

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Manitowoc "2000" 1¼ Yd. **Used** Diesel Shovel.

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LIMA Type 802-750 Dragline, Caterpillar type D-17000 diesel, 85 ft. boom, wide & long crawlers, and 2¼ yd. Hendrix bucket.

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360′ Ing. Rand, direct connected 75 HP 3/60/220/440 motor, 24x48″ air receiver, wt. 7050#.

160′ Davey, 100#, 35 HP, 3/60/220, Nat'l. Bd. receiver, V-belt drive, I-beam skids.

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Type "V-60" Butler All Steel 2-Compartment Bin, 2 sliding gates on bottom. 9′6″ W, 17′ L, 22′2″ high. Ht. of bin less legs 11′5″. A real buy.

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125 HP Erie City Economic, 100#, Nat'l. Bd., horiz.

125 HP Pennsylvania, 125#, Nat'l. Board, horiz.

115 HP Marion, 15#, horiz.

100 HP Pennsylvania, 125#, ASME, horiz.

80 HP I.B.W., 152#, 60″ dia. x 120″ high, vertical.

40 HP Nagle, 125#, 48x108″, ASME 1292, vertical.

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3 Yd. Page Dragline Bucket. A real buy.

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No. 3 Northwest Crawler Crane, Ser. 4603, gas powered, 40′ boom.

¾ yd. Mdl. 255A P&H Cranes, Sers. 5750 & 8243, gas engines, 30′ to 40′ boom.

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15 HP Mead Morrison #A-4015, Lincoln motor, 220/3/60, 15,000# @ 45 FPM. Excel. condition.

7½ HP Mead Morrison #952, 3/60/220, handle 1 to 5 loaded cars.

CRANES LOCOMOTIVE

30 ton Mdl. F OHIO #3266, 50′ boom, oil fired, Nat'l. Bd. 200# boiler.

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12x12 3 drum Lambert National #15, 442-3, rated 20,000# SLP. Wt. approx. 30,000#. Like new, steel gears, 2 clutch winch heads.

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Lambert, 2 drum, w/space for boiler. Size 8¼x10 drums 14x25x7″; size 9x10 drums 14x24x7½″; size 10½x12 one drum 24x34x8″ LP 9,000#, other drum 16x24x11″, LP 13,000#.

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65 Ton American Loc. Co. Diesel Electric, Std. Ga., Locomotive, fine shape and a real buy.

¾ yd. LS-85 Link Belt, year 1946, Cat. D-4600 Diesel, 40′ boom.

Mdl. 501 Koehring #1071, 60-70-80′ boom, 18′ jib, Mdl. K Wisc. gas engine, cap. 40,000# @ 12′.

1½ yd. Lorain Mdl. 77 Diesel Crane, Ser. 9163, D-13000 Cat. engine, 45′ to 85′ boom, 20′ jib.

1½ yd. P&H Mdl. 655-A Diesel Crane or Dragline, Ser. 6426,, 80′ boom, 20′ jib, Cat. D-13000 eng., hi gantry.

1½ yd. Mdl. K-360 Link Belt, Ser. 1959, Cat. D-13000 Diesel, 80′ boom.

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PRICES SHARPLY REDUCED ON ABOVE CRANES FOR INVENTORY CLEARANCE.

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30 ton Wiley Mdl. F. Stiffleg, 60, 80 or 100′ boom, rated with 60′ boom 30 ton @ 38′, 15 ton @ 57′.

20 ton Terry Steel Erectors Guy Derrick, 115′ mast, 105′ boom, rebuilt.

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12″ Dayton Dowd, vert., 50 HP 3/60/220/440, 6,000 GPH @ 19′, 4250 GPM @ 32′. Wt. 4110#. Centrifugal.

6″ Carter, self-prime, Hercules gas eng., 1,500 GPM, centrifugal.

4″ LaBour self prime, Mdl. WPD, direct connected 4 cyl. LeRoi gas engine. Cap. 400 GPM @ 25′ head. Wt. 1000#.

Pumps, from 1½″ up to 12″, electric, or gas, centrifugal, vertical and horizontal, diaphragm, sludge, steam and sump pumps.

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4x5 Size 145 American throttle reverse, wt. 2200#, rated 4,000#.

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NEWHOUSE 7", 10", 14"—KENNEDY 198, 258, 37—SUP. McC. 6" & 10" AL. CHAL. 322B, 222B, 536B, TRAYLOR TY 36".

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420 & 676 CFM WORTHINGTON BELTED.
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510 CFM ING. RAND XRB-2 13&8x12, Idler, belt
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856' SULL. WN-102 13&8x7, V-Dr. 150 HP 440 v.
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1—#783 Link Belt Type #7 Vertical Continuous Bucket Elevator—30 ft. 50 ton per hour nominal capacity.
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Two—40 ton, one 105 ton, 2—50 ton Steel BINS.
57' Chain ELEVATOR 12x12x24" buckets.
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All prices cheerfully quoted.

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NEW TROUGHING IDLER CONVEYOR BARGAINS

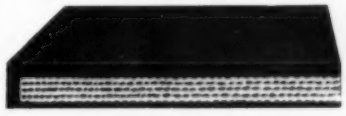
We take our loss on our stock of short length belting and previous model idlers. You save as much as 50% by buying the BONDED CONVEYOR SPECIALS listed with conveyor belting in two pieces. Belting is 4 ply, 28 oz. duck, 1/8" top rubber cover and 1/32" bottom cover.

Belt Width	Length of Conveyor	List Price	Sale Price
18"	25'	$1229	$ 658
18"	45'	1839	960
18"	50'	2054	1043
18"	85'	3209	1581
18"	100'	3704	1814
18"	130'	4694	2173
24"	25'	1322	739
24"	45'	2062	1085
24"	60'	2617	1355
24"	100'	4097	2037
24"	130'	5207	2606
30"	25'	1421	806
30"	65'	3101	1617
30"	80'	3731	2295

Other lengths and belt widths at bargain prices.

CONVEYOR BELTING

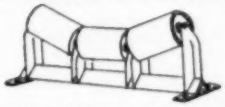
New heavy duty rubber belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For boxes, bags, and bulk materials. Troughs easily.
Famous Brands at Deep Cut Prices. Fresh Stock.



Width	Ply	Top Cov.	Bottom Cov.	Duck Carcass	Price
18"	4	1/8"	1/32"	28 oz.	$2.50/ft.
24"	4	1/8"	1/32"	28 oz.	3.23/ft.
30"	4	1/8"	1/32"	28 oz.	3.97/ft.

Additional width and plies available at low prices. Write for free sample.

TROUGHING IDLERS & RETURN ROLLS



3-roll Troughing Idlers for these sizes:

16" belt	$17.25	30" belt	$19.50
18" belt	18.00	36" belt	20.25
24" belt	18.75	48" belt	21.75

1-roll Return Idlers for these sizes:

16" belt	$6.75	30" belt	$8.25
18" belt	7.13	36" belt	8.75
24" belt	7.50	48" belt	10.25

All steel. Interchangeable with other well known makes. Replaceable ball bearings. Rust proof ball races—maintenance is negligible.

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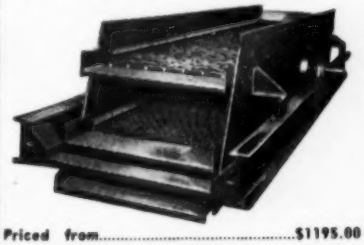
For sizing & separation of Rock, Sand, Gravel, Slag, Coal and many other uses. Shaft is mounted on self-aligning bearings & made in heavy duty eccentric shaft types; 1 to 5 decks, 3'x 8' to 5'x 14'.



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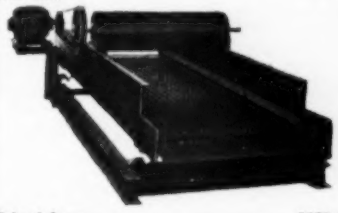
Bonded General Purpose Screens are ideal & economical for medium operations. Sizes to 3'x 8' in 1 to 3 decks. Wire cloth or plate included.



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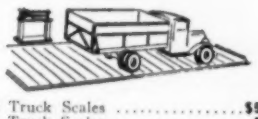
For stationary and portable applications. Scales have steel lever system complete with structural steel weighbridge. Capacities to 50 tons. Recording beams available.



20 Ton Truck Scales	$525.00
26 Ton Truck Scales	582.00
33 Ton Truck Scales	825.00

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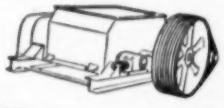
Bonded double roll crushers are available with Smooth, Fine or Coarse Corrugated rolls or any combination of same for crushing Lightweight Aggregate, Pumice, Perlite, Chemicals and similar material. Capacities to 100 tons per hour. Steel hoppers included.



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LOCOMOTIVE CRANE: Link Belt 25 ton, standard railroad gauge, gasoline powered, air brakes, cast steel trucks, bucket handling, with or without 1¼ yd. clam shell bucket. Thoroughly modern, excellent condition. For sale or rent, located Minnesota.
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750	*A. C.	TEFC	1800
750	*G. E.	KT	720
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10x11	Worth.	HB	100	294
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4' x 10' Seco, double deck.
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14" Dia. x 30" face magnetic pulley.

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Cummins	L	755.38	991.42
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General Motors	3-71	112.80	148.05
General Motors	4-71	125.98	165.35
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2' Symons—3' Symons standard and shorthead—4' Symons standard and shorthead—36" Telsmith—36 A.C. Hydrocone—A.C. 10 K gyratory—A.C. 7½ K Gates—38½ Kennedy van Saun—28 Telsmith Intercone—7" Newhouse—A.C. 12K & 12N Gates.

Jaw crushers 48 x 60—42 x 48—36 x 48—30 x 42—24 x 36 others. Roll crushers—rod mills—ball mills—hammer mills—gravel plants.

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¾-yd. Byers shovel, model 83, gas, rebuilt, 8 yrs. old. Price $6500.00, Milwaukee.

25-ton American steam locomotive crane, 50' boom, new in 1930, A-1 shape. $7000.00, Chicago.

P & H double drum clamshell bucket handling bridge crane 3/60/440 volt. Span to suit.

25 ton Shaw-Box overhead Crane, 42' span, 3/60/220.

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855 P&H, year 1948, 2 yard shovel front and dragline combination, used very little. It will go out and work for a long time without need of repairs. 80' boom with 2 yard lightweight bucket, if 55' boom is used will handle a 3 yard bucket. Have a 45 ton trailer 10½' wide for transporting same. If interested in buying new shovel, be sure and see this one first. Price $23,500.00.

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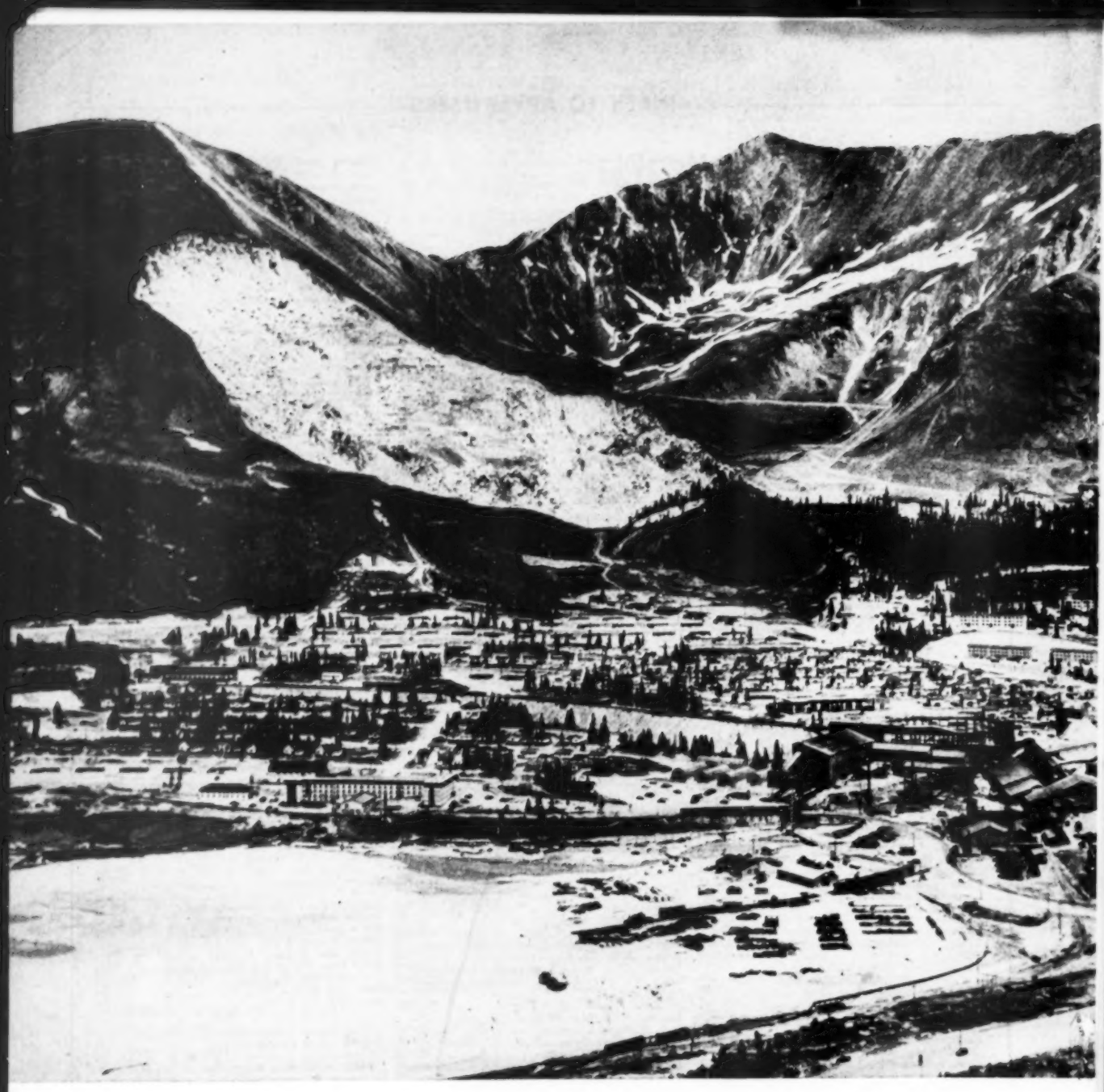

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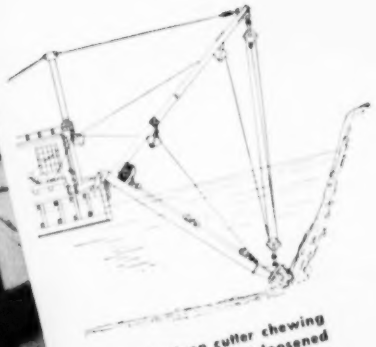

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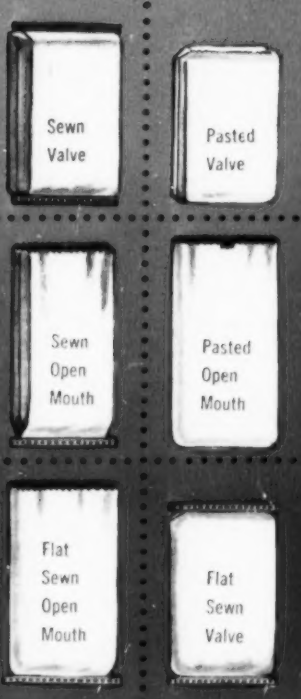

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